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LUKOVKIN, A.I.

MAN'KO, P.A., kandidat tekhnicheskikh nauk; LUKOVKIN, A.I.; SVINARENKO, V.A., inzhener.

Waste heat boiler-mufflers. Sudostroenie 23 no.6:15-18 Je '57. (MLRA 10:7)

(Boilers, Marine)

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LUKOVKIN, A. I.

MAN'KO, P.A., kandidat tekhnicheskikh nauk; ANDREYEV, I.L., inzhener; LUKOVKIN, A.I., inzhener.

Protection from corrosion of marine boiler economizers. Sudostroenie 23 no.7:43-45 Jl '57. (MLRA 10:8)
(Boilers, Marine) (Corrosion and anticorrosives)

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MAN'KO, P.A., kand. tekhn. nauk; ANDREYEV, I.L., inzh.; LUKOVKIN, A.I., inzh.

Building auxiliary water-tuber boilers for sea-going vessels. Sudostroenie 23 no.11:47-49 N '57. (MIRA 11:1)
(Boilers, Water-tube)

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ANDREYEV, Igor' Leonidovich; LUKOVKIN, Aleksandr Ivanovich; MAN'KO, Petr Alekseyevich; TIKHOMIROV, Aleksandr Anatol'yevich; KUZ'MIN, I.N., otv.(nauchnyy) red.; VLASOVA, Z.V., red.; ERASTOVA, N.V., tekhn.red.

[Protecting marine watertube boilers from corrosion] Zashchita sudovykh vodotrubnykh kotlov ot korrozii. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1958. 100 p. (MIRA 12:1)
(Corrosion and anticorrosives) (Boilers, Watertube)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVKIN A.I.

MAN'KO, P.A., kand. tekhn. nauk; ANDREYEV, I.L., inzh.; LUKOVKIN, A.I., inzh.; D'YAKOV, V.V.

Machining marine boiler collecting drums on multispindle machine tools. Sudostroenie 24 no.2:51-54 F '58. (MIRA 11:3)
(Boilers, Marine) (Machine tools)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVKIN, A.I., inzh.

Tube fastening to steam-boiler and heat-exchanger tube plates by means of high-voltage electric discharges. Sudostroenie 25 no.1:40-43 N '59. (MIRA 13:4)
(Marine pipe fitting)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVKIN, A.I., inzh.

Controlled process of pipe expanding. Sudostroenie 25 no.9: 37-41 S '59. (MIRA 12:12)
(Marine pipe fitting)

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L 65104-65 EWT(m)/EWP(t)/EWP(k)/EWP(b)/EWA(c) JD/EW

ACCESSION NR: AP5021975 UR/0285/65/000/014/0035/0035
662.151:621.984.58

AUTHOR: Navagin, Yu. S.; Lukovkin, A. I.; Man'ko, P. A.; Ponomarev, G. D.; Pin, M. V. 44,55 44,55 44,55 44,55 44,55

TITLE: A method for pressing pipes in tube sheets. Class 13, No. 172644

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 35

37
B

TOPIC TAGS: pipe, metal tube, explosive forming 6, 44,55

ABSTRACT: This Author's Certificate introduces a method for pressing pipes in tube sheets in heat exchangers by using the pressure of a medium inside the pipes. Reliability is improved and the process is simplified by creating the pressure through the explosion of charges placed in each pipe at a depth which corresponds to the thickness of the tube sheet.

ASSOCIATION: none

SUBMITTED: 03Jun61 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000

MLK

Card 1/1

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LUKOVNIKOV, A., inzh.; ZAYTSEV, F.

Improved gauge. Stroitel' no.7:19 Jl '59. (MIRA 12:10)
(Tiles)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

SMIRNOV, B., kand.tekhn.nauk; BYSTRITSKIY, D. Kand.tekhn.nauk, LUKOVNIKOV, A.; kand.tekhn nauk

Mobile power stations speed up mechanization. Nauka i pered.op. v sel'khoz. Nauka i pered.op.v sel'khoz. 9 no.12:44-47 D '59. (MIRA 13:4)

(Electric power plants)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

GANTMAN, V., inzh., prepodavatel'; LUKOVNIKOV, A.F., kand.tekhn.nauk, prepodavatel'; NOVIKOV, M., kand.tekhn.nauk, prepodavatel'

Let's give young specialists a lasting knowleige of industrial hygiene. Okhr. truda i sots. strakh. 5 no.6:18-19 Je '62. (MIRA 15:7)

1. Moskovskaya ordena Lenina sel'skokhozyaystvennaya akademiya imeni K.A. Timiryazeva.
(Agriculture—Hygienic aspects)

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ASINOVSKIY, V.,; LUKOVNIKOV, A.

Fitting propulsion bulbs on the propeller. Mor. flot 23 no. 12: 37-38 D '63. (MIRA 17:5)

1. Starshiy inzh. TSentral'nogo proyektno-konstruktorskogo byuro No. 1 Ministerstva morskogo flota (for Asinovskiy).

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

AFONIN, Zakhariy Mikhaylovich; KATSMAN, Feliks Maksovich; LUKOVNIKOV, Anatoliy Alekseyevich; REUT, N.I., red.izd-va; TIKHONOVA, Ye.A., tekhn.red.

[Screw propellers; design and requirements of their manufacture] Grebnye vinty; raschety i trebovaniia k izgotovleniiu. Moskva, Izd-vo "Morskoi transport," 1959. 206 p. (MIRA 13:3)
(Propellers)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

KATSMAN, Feliks Maksimovich; KUDREVATYY, Georgiy Mikhaylovich; FISHER, A.Z., inzh., retsezent; FERDMAN, G.S., inzh., retsenzent; LUKOVNIKOV, A.A., nauchn. red.; KAZAROV, Yu.S., red.; KOROVENKO, Yu.N., tekhn. red.

[Design of screw-propeller complexes for seagoing ships] Konstruirovanie vinto-rulevykh kompleksov morskikh sudov. Leningrad, Sudpromgiz, 1963. 509 p. (MIRA 16:10)
(Propellers)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

ASINOVSKIY, V.I., inzh.; KATSMAN, F.M., inzh.; LUKOVNIKOV, A.A., inzh.

Advisability of providing propulsion bulbs on seagoing ship rudders. Sudostroenie 29 no.11:8-10 N '63. (MIRA 16:12)

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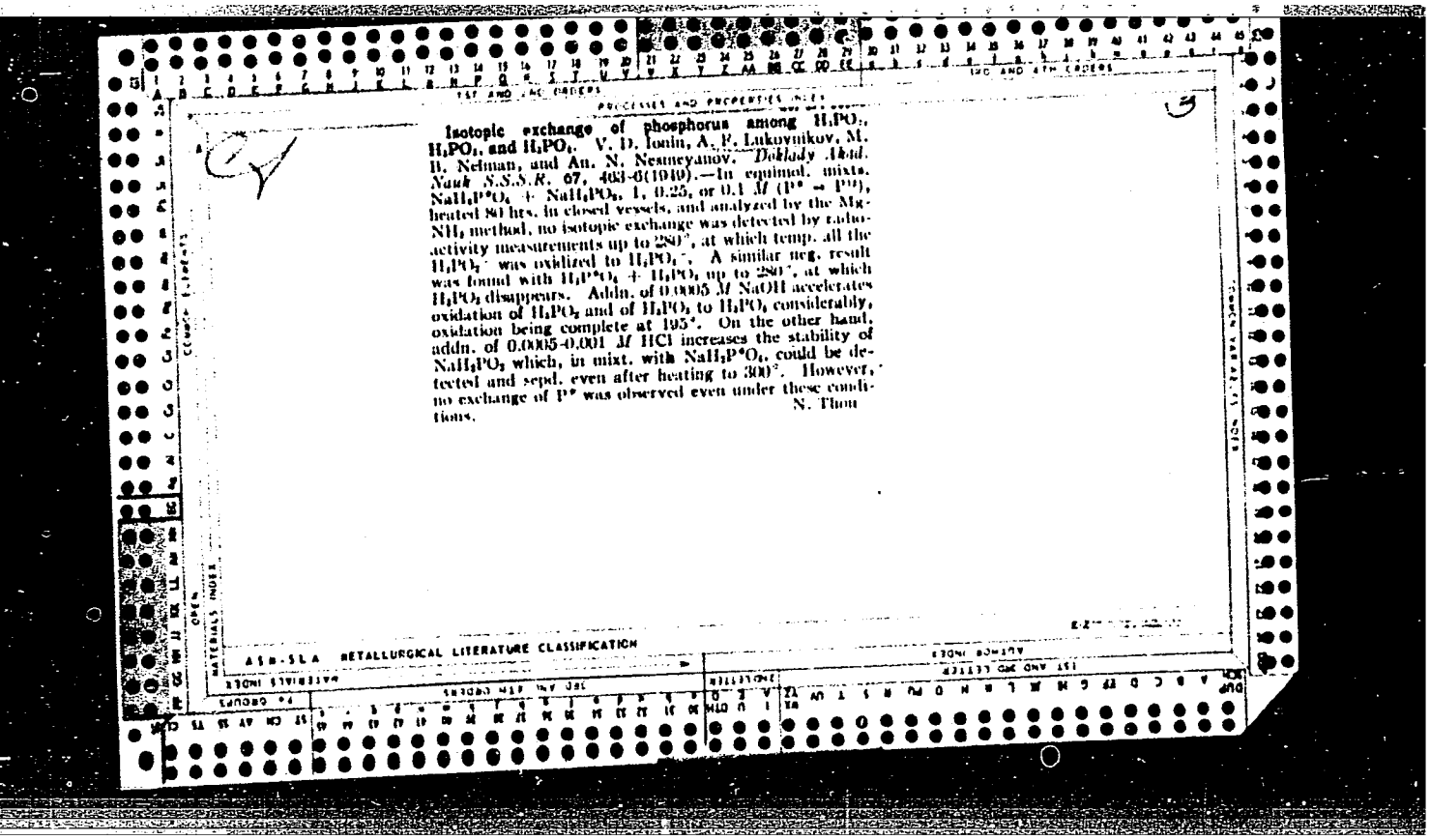

Isotopic exchange of phosphorus among H_3PO_4, H_3PO_3, and H_3PO_2. V. D. Ionin, A. F. Lukovnikov, M. B. Neiman, and An. N. Nesmeyanov. *Doklady Akad. Nauk S.S.S.R.* 67, 483-6(1949).—In equimol. mixts. $NaH_2P^*O_4$ + NaH_2PO_3, 1, 0.25, or 0.1 *M* ($P^* = P^{32}$), heated 80 hrs. in closed vessels, and analyzed by the $MgNH_4$ method, no isotopic exchange was detected by radioactivity measurements up to 280°, at which temp. all the $H_2PO_3^-$ was oxidized to $H_2PO_4^-$. A similar neg. result was found with $H_3P^*O_4$ + H_3PO_3 up to 280°, at which H_3PO_3 disappears. Addn. of 0.0005 *M* NaOH accelerates oxidation of H_3PO_2 and of H_3PO_3 to H_3PO_4 considerably, oxidation being complete at 195°. On the other hand, addn. of 0.0005-0.001 *M* HCl increases the stability of NaH_2PO_2 which, in mixt. with $NaH_2P^*O_4$, could be detected and sepd. even after heating to 300°. However, no exchange of P^* was observed even under these conditions. N. Thon

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C. A.
1951

General and Physical Chemistry
2.

Isotopic exchange of phosphorus between the phosphate ion and esters of phosphoric acid A. E. Lukyanikov, V. P. Mel'nyeley, M. B. Neiman, An. N. Nesmeyanov, and I. S. Shaverdina. *Guide to Russ. Sci. Periodical Lit.* 3, 187-9 (1952)(English translation).—See *C.A.* 44, 4315*i*.
E. J. C.

Moscow State U. im. Lomonosov and Gor'kiy State U.

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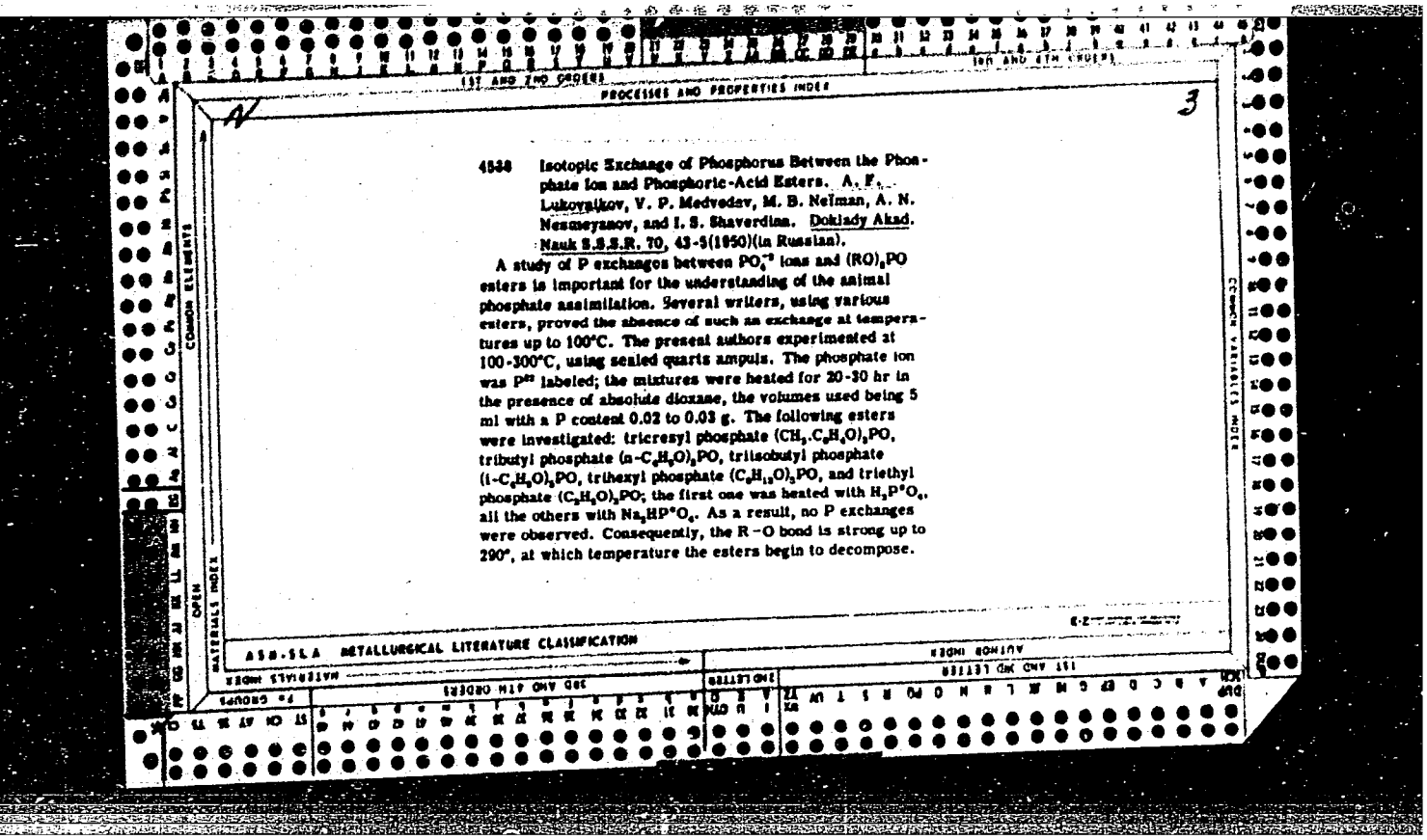

4538 Isotopic Exchange of Phosphorus Between the Phosphate Ion and Phosphoric-Acid Esters. A. F. Lukovnikov, V. P. Medvedev, M. B. Neiman, A. N. Nesmeyanov, and I. S. Shaverdina. Doklady Akad. Nauk S.S.S.R. 70, 43-5(1950)(in Russian).

A study of P exchanges between PO_4^{-3} ions and $(RO)_3PO$ esters is important for the understanding of the animal phosphate assimilation. Several writers, using various esters, proved the absence of such an exchange at temperatures up to 100°C. The present authors experimented at 100-300°C, using sealed quartz ampuls. The phosphate ion was P^{32} labeled; the mixtures were heated for 20-30 hr in the presence of absolute dioxane, the volumes used being 5 ml with a P content 0.02 to 0.03 g. The following esters were investigated: tricresyl phosphate $(CH_3.C_6H_4O)_3PO$, tributyl phosphate $(n\text{-}C_4H_9O)_3PO$, triisobutyl phosphate $(i\text{-}C_4H_9O)_3PO$, trihexyl phosphate $(C_6H_{13}O)_3PO$, and triethyl phosphate $(C_2H_5O)_3PO$; the first one was heated with $H_3P^*O_4$, all the others with $Na_2HP^*O_4$. As a result, no P exchanges were observed. Consequently, the R-O bond is strong up to 290°, at which temperature the esters begin to decompose.

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CA

Synthesis of propene-2-C^{14}. M. B. Neiman, A. F. Lukovnikov, and B. Z. Iofa. *Doklady Akad. Nauk S.S.S.R.* 78, 493–8(1951).—The synthesis was accomplished according to the scheme $CaC^{14}O_3 \rightarrow C^{14}O_2$ + MeMgI → $MeC^{14}O_2MgI$ → $(MeC^{14}O_2)_2Ba$ → pyrolysis → $MeC^{14}OMe$ + H at 20° and 60 atm. H → $MeC^{14}H(OH)Me$ (+ Al_2O_3 at 400°) → $MeC^{14}H{:}CH_2$. The carbonation of RMgX was best done at −20°. Since the decompn. of the Grignard complex was done with dil. H_2SO_4, a little Ag_2SO_4 was added to bind any HI formed. The final product had 3% of the initial activity of the $BaCO_3$, and the P-T diagram fitted closely with that of normal C_3H_6. G. M. Kosolapoff

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LUKOVNIKOV, A. F.

USSR

Chromatographic separation of dinitrophenylhydrazones on acetylated papers. M. B. Neiman, V. N. Levkovskii, and A. F. Lukovnikov. *Doklady Akad. Nauk S.S.S.R.* 81, 841–4(1951); cf. J. V. Kostir and E. Slavik, *C.A.* 44, 8817c.—In order to adapt the methods of paper chromatography to nonpolar, hydrophobic substances the chemical treatment proposed by Kostir (loc. cit.) is used. This method consists of replacing the polar OH groups of cellulose by Ac groups, thereby increasing the hydrophobic character of paper. The optimum conditions for acetylation are discussed. The paper, thus treated, is used for the sepn. of the dinitrophenyl hydrazones of formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, and acrolein. Good sepn. was attained. I. Rovtar Leach

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Lukavn. Kor, A.F.

The use of radioactive carbon C^{14} in hydrocarbon oxidation investigations in the gas phase. M. B. Neiman, A. F. Lukovnikov, and G. I. Feklisov. *Voprosy Khim. Kinetiki, Kataliza i Reaktsionnoi Sposobnosti Akad. Nauk S.S.S.R.* 1953, 184–90.—A method is described for the chromatographic sepn. of aldehyde and alc. derivs. formed in the oxidation of tagged hydrocarbons. The radioactivity of hydrocarbons and of the C oxides can be measured with a counter which is located internally. α-HO aldehydes are formed together with various other aldehydes during hydrocarbon oxidation. The fact that AcH and CH_2O are found to form from different portions of the oxidized hydrocarbon contradicts the destructive hydrocarbon oxidation theory.

W. M. Sternberg

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Lukovnikov, AN

7

USSR.

The synthesis of pentane-1-C^{14} and pentane-3-C^{14}. A. F. Lukovnikov, M. B. Neiman, A. A. Baz', L. M. Reshetnova, I. S. Samushina, and N. Ya. Bilenyuk. *Doklady Akad. Nauk S.S.S.R.* 93, 297–300(1953).—Tagged pentane mols. were prepd. from $C^{14}O_2$ according to the following schemes: $BuMgBr + C^{14}O_2 \rightarrow BuC^{14}O_2MgBr \rightarrow BuC^{14}O_2H \rightarrow BuC^{14}O_2Et$ (+ H_2/Cu-Cr at 140 atm. and 280°) → $BuC^{14}H_3$. $EtMgI + C^{14}O_2 \rightarrow EtC^{14}O_2MgI \rightarrow EtC^{14}O_2H$ (I); I + $Ba(OH)_2 \rightarrow (EtC^{14}O_2)_2Ba$ (II); II (at 350°) gives $Et_2C^{14}O$ (III); III (+ H_2/Cu-Cr at 120 atm. and 350°) → $Et_2C^{14}H_2$. The best yields (95–7%) were obtained in the reaction of CO_2 with the RMgX at low temps. and with a 0.5*N* soln. of the RMgX. Pentane-1-C^{14} was obtained with an over-all yield of 85% and pentane-3-C^{14} with an over-all yield of 82%. J. Botvar Leach

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USSR

Study of the oxidation of propylene by means of radioactive carbon. A. P. Lukovnikov and M. B. Neiman. *Doklady Akad. Nauk S.S.S.R.* 91, 881-4(1953).—In order to study the oxidation of propylene, propene-2-C^{14} (I) was prepd. I was reacted with an equimolar amt. of O. The kinetics of the reaction were followed by detg. the pressure change in the reaction vessel. The oxidation products were analyzed at the beginning and at the end of the period of rapid reaction (4 min. and 4 min. 30 sec., resp., after start of oxidation). From the results of the analysis, a step-wise scheme is proposed to represent the oxidation process. J. R. L.

Inst. Chem. Phys., AS USSR

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LUKOVNIKOV, A. F.

Chromatographic separation of mixtures of 2,4-dinitrophenylhydrazones of aldehydes and mixtures of 3,5-dinitrobenzoates of alcohols. A. F. Lukovnikov. *Trudy Komissii Anal. Khim., Akad. Nauk S.S.S.R., Inst. Geokhim. i Anal. Khim.* 6, 101-6(1955).—Butyraldehyde (I), propionaldehyde (II), AcH, HCHO, MeOH, EtOH, and PrOH can be sepd. from a mixt. resulting from oxidation of a hydrocarbon. The PrOH fraction may also contain iso-PrOH and BuOH. The sample used came from oxidation of C_5H_{12}. The aldehydes were pptd. with $NaHSO_3$. The liquid was distd. and the distillate treated with 3,5-dinitrobenzoyl chloride. Excess 3,5-dinitrobenzoic acid was neutralized by *N* NaOH. The mixt. was sepd. on prepd. silica gel. The $NaHSO_3$-aldehyde products were treated with weak alkali soln. in an atm. of N. The aldehydes were distd. and treated with a satd. soln. of 2,4-dinitrophenylhydrazine in 2*N* HCl. The ppt. was sepd., dissolved in petr. ether, b. 45-85°, and passed through a column 8 × 250-300 mm., contg. silica gel (grain size 3 mm. or less). Adsorption capacity of the gel can be increased by treating the gel with HNO_3 and heating the gel in an O current at 500-600°. In a study of individual hydrazones the distance traveled by the zones was plotted against time. A 4-component mixt. (5-10 µg. dinitrophenylhydrazones) can be sepd. on a 8 × 200-mm. column. Compds. of I and II eluted quickly and separately, but HCHO and AcH compds. traveled 15-20 cm. together. The column was washed by petr. ether contg. either 3-5% by vol. of Et_2O or 1-3% by vol. of acetone. For 3,5-dinitrobenzoates the silica gel was treated with a MeOH soln. of Rhodamine 6-ZH and dried at 110°. In light of 400-250 mµ the column was yellow and the zones were dark. The rate of travel of the esters increased as mol. wt. increased. The rates of Me, Et, and Pr esters permit their sepn., but iso-Pr and Bu esters could not be sepd. from Pr ester. The wash liquid was a petr. ether and Et_2O mixt. On a 8 × 250-mm. column 100 mg. of a mixt. of Me, Et, and Pr dinitrobenzoates can be sepd. in 4-6 hrs. To reduce this time by 2-3 hrs., compressed N was used to put 2-3 atm. of pressure on the top of the column.

Burilla Mayerle

Inst. Chem. Physics, AN USSR

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LUKOVNIKOV, A. F.

5

Oxidation of hydrocarbons. M. B. Neiman, A. F. Lukovnikov, and G. I. Fekilyov. *Zhur. Obshchei Khim.* 25, 1311–8(1955).—C¹⁴-labeled CH_4, C_2H_4, C_6H_{12} with 1-position being labeled, and C_3H_8 and C_4H_{10} with the central C atom being labeled were used to study the nature of oxidation of hydrocarbons by air O at 305–40°. The results showed that CH_2O and AcH are formed in different parts of the chain and not only in the terminal parts of the chains as suggested previously (cf. Pope, *et al.*, *C.A.* 23, 3897; Nametkin and Teneva, *C.A.* 37, 3254⁹). The results are interpretable with the radical-chain mechanism suggested by Semenov (cf. *C.A.* 48, 29a), to which must be added the possibility of formation of CH_2O by decompn. of the radical $FCH_2O\cdot$ into R· and CH_2O, which permits CH_2O formation from any C atom in a chain. Also in *J. Gen. Chem. U.S.S.R.* 25, 1285–68(1955)(Engl. translation).

G. M. Kosolapoff

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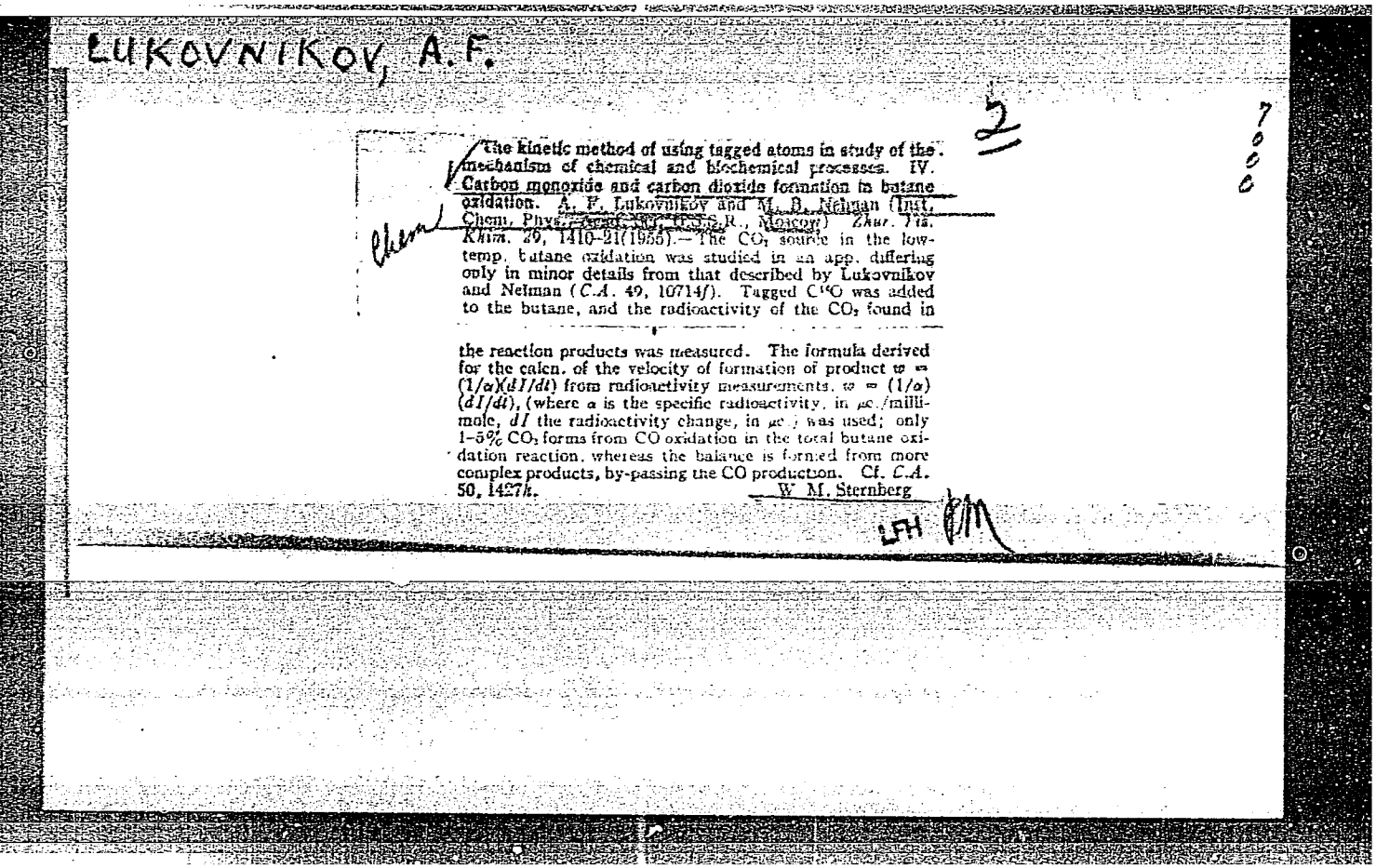

LUKOVNIKOV, A. F.

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Chem

The kinetic method of using tagged atoms in study of the mechanism of chemical and biochemical processes. IV. Carbon monoxide and carbon dioxide formation in butane oxidation. A. F. Lukovnikov and M. B. Neiman (Inst. Chem. Phys., Acad. Sci. U.S.S.R., Moscow). *Zhur. Fiz. Khim.* 29, 1410–21(1955).—The CO_2 source in the low-temp. butane oxidation was studied in an app. differing only in minor details from that described by Lukovnikov and Neiman (*C.A.* 49, 10714*f*). Tagged $C^{14}O$ was added to the butane, and the radioactivity of the CO_2 found in the reaction products was measured. The formula derived for the calcn. of the velocity of formation of product $w = (1/\alpha)(dI/dt)$ from radioactivity measurements, $w = (1/\alpha)(dI/dt)$, (where α is the specific radioactivity, in μc./millimole, dI the radioactivity change, in μc.) was used; only 1–5% CO_2 forms from CO oxidation in the total butane oxidation reaction, whereas the balance is formed from more complex products, by-passing the CO production. Cf. *C.A.* 50, 1427*h*.

W. M. Sternberg

LFH BM

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L. u Kovnikov, A.F.

Application of labeled atoms to the study of complex reactions. VI. Oxidation of propylene in the presence of $C^{14}O$ and $CH_3C^{14}HO$. M. B. Neiman, V. Yu. Efremov, N. K. Serdyuk, and A. F. Lukovnikov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 408–14; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 397–400(Engl. translation); cf. *C.A.* 50, 10535*h*; 51, 819*a*.—Detn. of specific activities α_{CO} and α_{CO_2} as functions of time (t) during the course of oxidation of a mixt. contg. 48% C_3H_6, 50.7% O_2, 1.08% CO_2, and 0.22% $C^{14}O$ at 340° and initial pressure p_0 = 281 mm. disclosed that α_{CO} decreased steadily but α_{CO_2} initially increased, passed through a max., and finally decreased. At the max. of the α_{CO_2} vs. t plot, α_{CO} and α_{CO} were correlated with the rates of formation of CO_2 from CO (w_1) and the total rate of formation of CO_2 (w) by the equation $w/w_1 = \alpha_{CO}/\alpha_{CO_2} = 26$. Thus only 3–4% of the total CO_2 was formed by oxidation of CO. These results agreed with previous work on the oxidation of n-C_4H_8 (*C.A.* 51, 819*i*). Detn. of pressure changes (Δp) as a function of t during the course of oxidation of a mixt. contg. 48.87% C_3H_6, 50% O_2, and 1.13% $CH_3C^{14}HO$ at 315° and p_0 = 243 mm. disclosed the existence of an induction period, and of 4 cold-flame regions of short duration followed by a slow decrease of p. Measurements of the concn. of AcH (x) and of the specific activity α_{AcH} as functions of time disclosed that the decrease of α_{AcH} was much slower than the increase of x. Thus, the AcH formed was concurrently consumed to yield other oxidation products. Calcns. based on the reported exptl. results and in part on formulas previously derived (Neiman, *C.A.* 49, 13748*e*) showed that the rates of formation and consumption of AcH exhibited sharp max. in the region of cold flames, and that 50% CO_2 and

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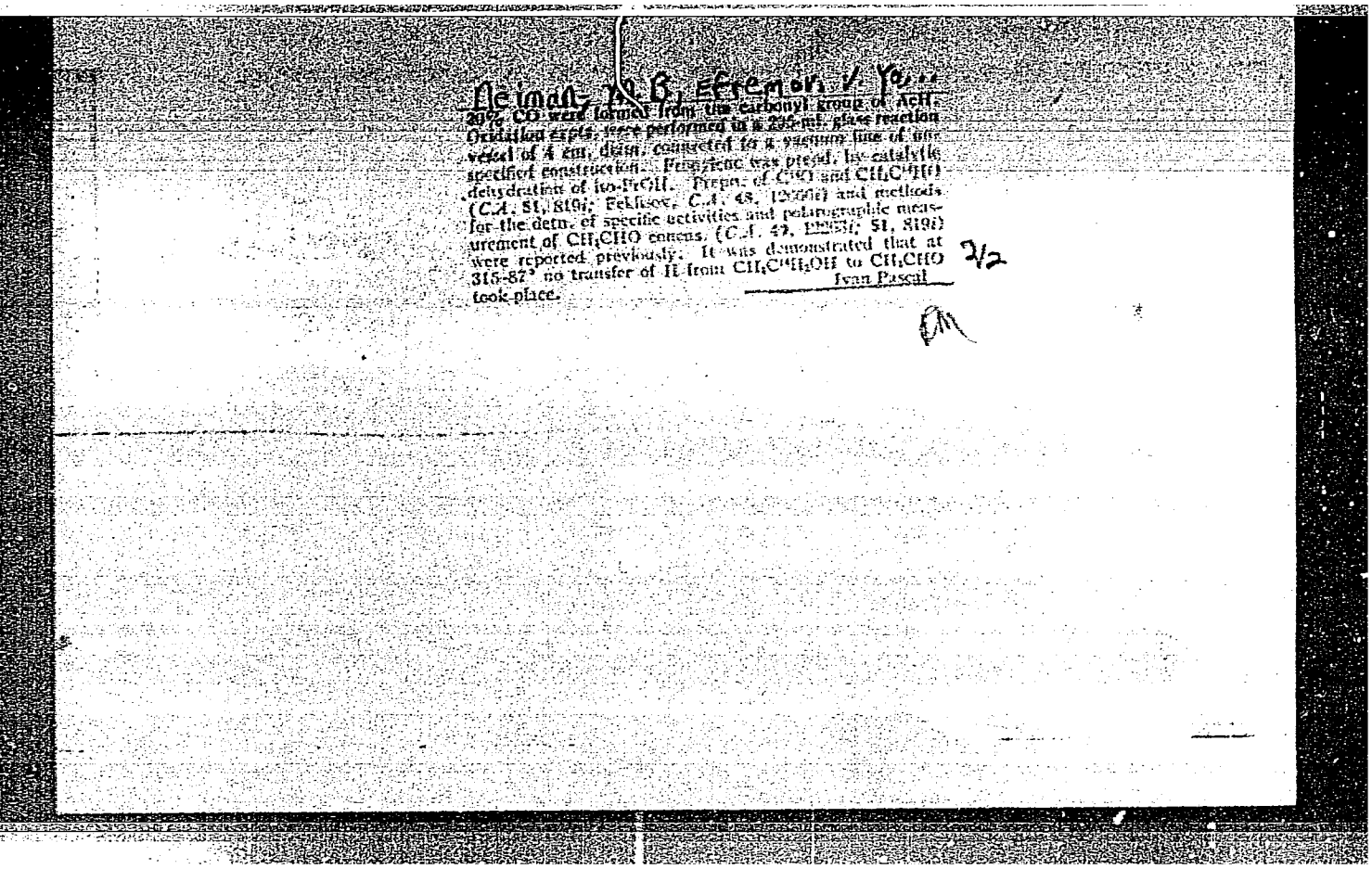

Heimann, W. B., Efremov, V. Ya.

20% CO were formed from the carbonyl group of AcH. Oxidation expts. were performed in a 250-ml. glass reaction vessel of 4 cm. diam. connected to a vacuum line of usual specified construction. Pumicone was used, its catalytic dehydration of iso-PrOH. Preps. of CuO and CH_3CHO (C.A. 51, 8196; Feldman, C.A. 48, 12966) and methods for the detn. of specific activities and polarographic measurement of CH_3CHO concns. (C.A. 47, 12965; 51, 8196) were reported previously. It was demonstrated that at 315-87° no transfer of H from CH_3CH_2OH to CH_3CHO took place.

Ivan Pascal

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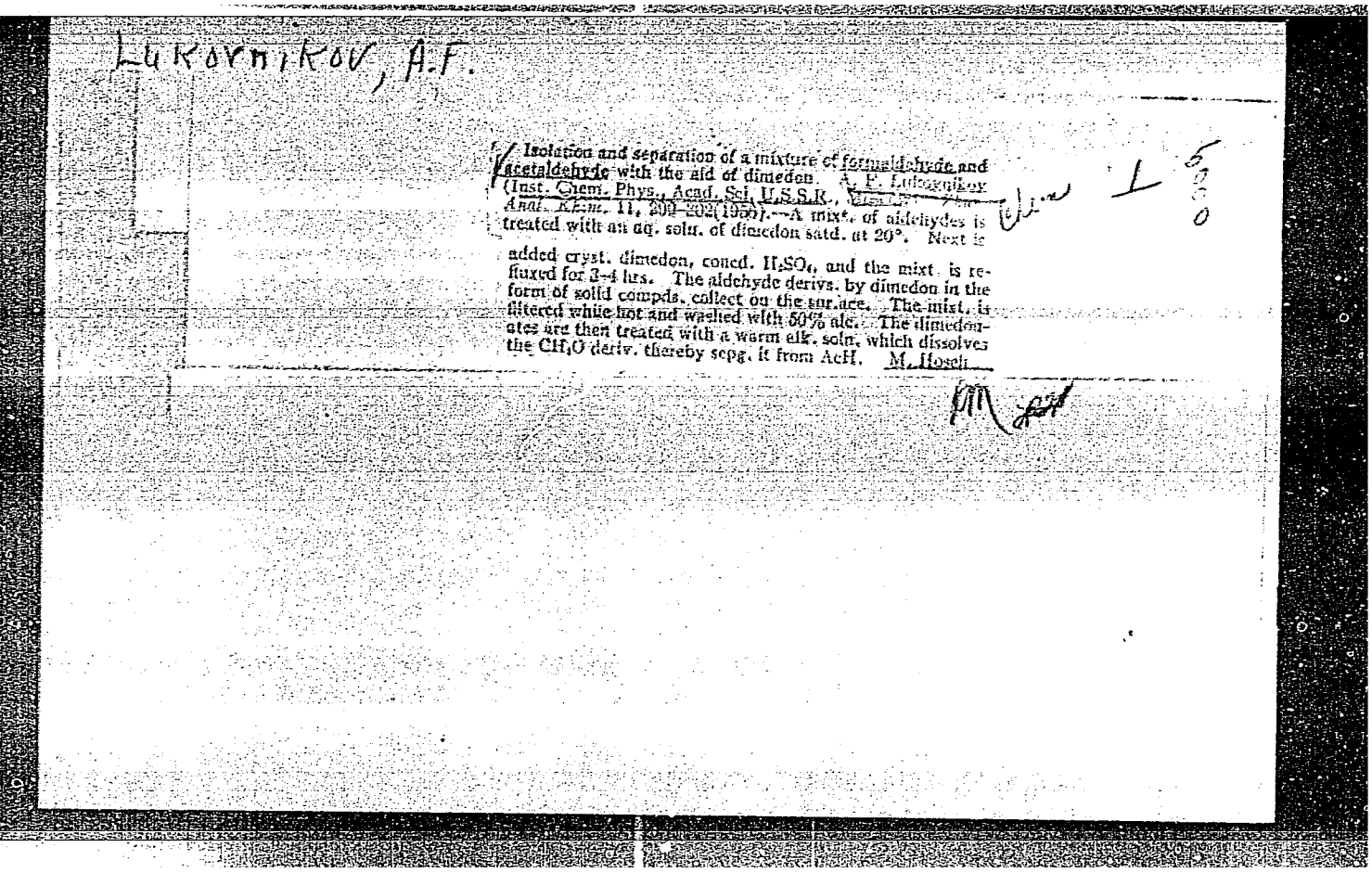

Lukovnikov, A.F.

Isolation and separation of a mixture of formaldehyde and acetaldehyde with the aid of dimedon. A. F. Lukovnikov (Inst. Chem. Phys., Acad. Sci. U.S.S.R., [illegible]). *Anal. Chim.* 11, 209–202(1956).—A mixt. of aldehydes is treated with an aq. soln. of dimedon satd. at 20°. Next is added cryst. dimedon, concd. H_2SO_4, and the mixt. is refluxed for 3–4 hrs. The aldehyde derivs. by dimedon in the form of solid compds. collect on the surface. The mixt. is filtered while hot and washed with 50% alc. The dimedonates are then treated with a warm alk. soln. which dissolves the CH_2O deriv. thereby sepg. it from AcH. M. Hosoli

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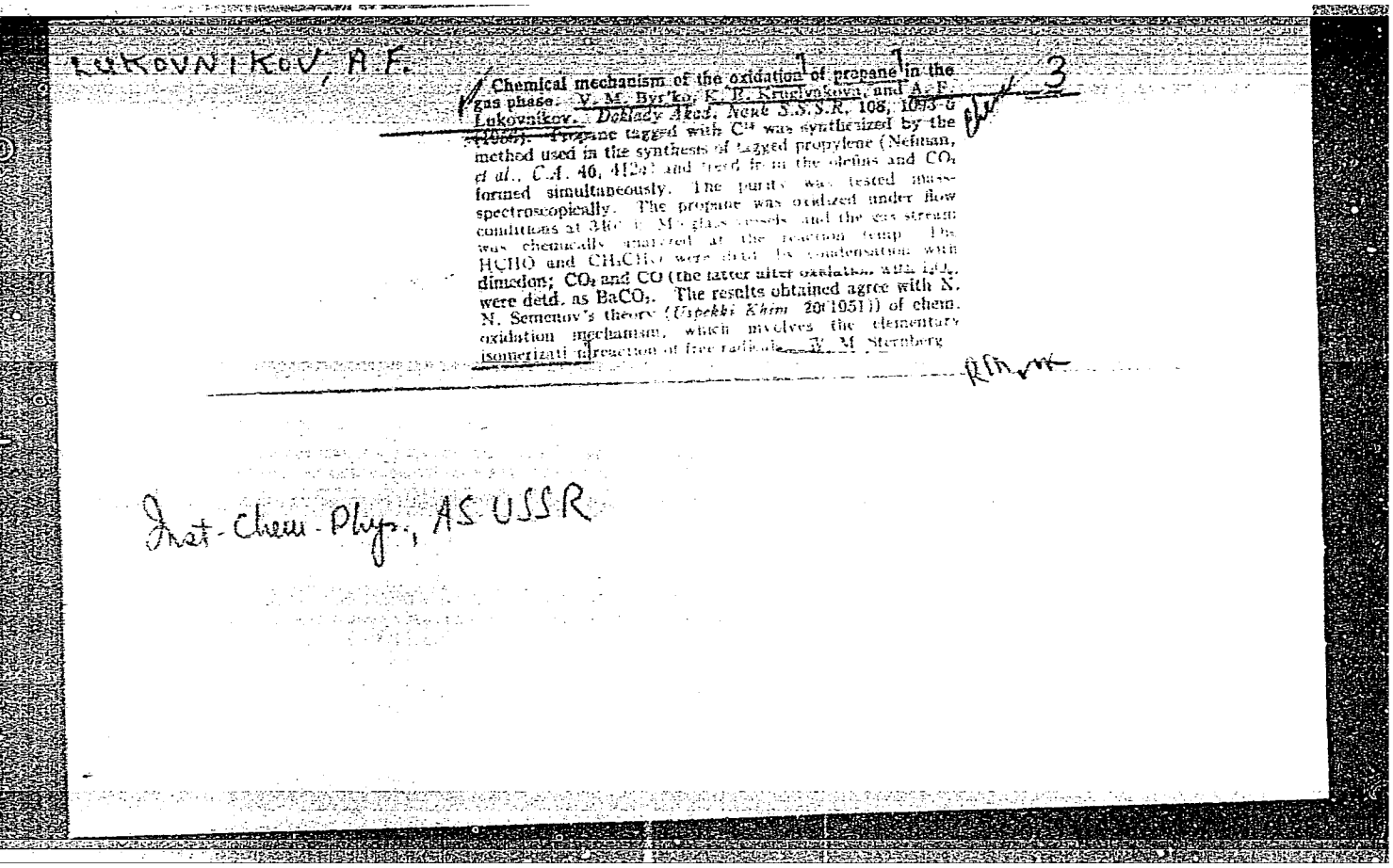

LUKOVNIKOV, A.F.

Chemical mechanism of the oxidation of propane in the gas phase. V. M. Byr'ko, K. B. Kruglyakova, and A. F. Lukovnikov. *Doklady Akad. Nauk S.S.S.R.* 108, 1093-6 (1956). Propane tagged with C^{14} was synthesized by the method used in the synthesis of tagged propylene (Neiman, *et al.*, *C.A.* 46, 412e) and used in the oxidation and CO_2 formed simultaneously. The purity was tested mass-spectroscopically. The propane was oxidized under flow conditions at 340° in Mo-glass vessels and the gas stream was chemically analyzed at the reaction temp. The HCHO and CH_3CHO were detd. by condensation with dimedon; CO_2 and CO (the latter after oxidation with I_2O_5) were detd. as $BaCO_3$. The results obtained agree with N. N. Semenov's theory (*Uspekhi Khim.* 20(1951)) of chem. oxidation mechanism, which involves the elementary isomerizati[on] of free radicals. V. M. Sternberg

Inst. Chem. Phys., AS USSR

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S/190/61/003/008/014/019
B110/B208

15.8200 2209

AUTHORS: Levin, P. I., Lukovnikov, A. F., Neyman, M. B., Khloplyankina, M. S.

TITLE: Mutual increase of antioxidant activity (synergism). I. Occurrence of synergism in mixtures of mercapto benzimidazole with some inhibitors

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 8, 1961, 1243 - 1246

TEXT: With reference to foreign papers the authors studied the effect of antioxidants. If the action of one inhibitor prevents the formation of free radicals, and that of another peroxide decomposition, joint use of both inhibitors may have a better effect than additivity. This was studied by the effect of mixtures of mercapto benzimidazole (MBA), p-hydroxyphenyl-β-naphthylamine (p-oxyneozone, ON), or П-24 (P-24) (condensation product of styrene and phenol) on the oxidation of polypropylene containing 10% atactic structure at 200°C and 200 mm Hg. The induction period of oxidation was determined from the drop of oxygen pressure to 1.0 mm Hg. It was found that the induction period linearly increased at

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Mutual increase of...

low inhibitor concentration, and that it remained practically constant at a concentration of about 0.1 moles/kg. Fig. 2 shows the effect of a mixture of MBA and ON at different concentration. Conditions are similar when a mixture of MBA and P-24 is used. At optimum molar ratios, the activity of a mixture of oxidation inhibitors is by a multiple higher than the sum of component activities. To determine the volatility of anti-oxidants, polymer samples were heated to 200°C for 3, 6, or 12 hr in CO_2 atmosphere (200 mm Hg), oxidation was performed, and the induction period measured. The induction period was found to be shortened corresponding to volatilization of reagents. The use of mixtures of oxidation inhibitors for polymer stabilization is very promising. A paper by K. I. Ivanov, Ye. D. Vilyanskaya, A. A. Luzhetskiy, Teploenergetika, 1960, no. 11, 34 is mentioned. There are 5 figures and 7 references: 3 Soviet-bloc and 4 non-Soviet-bloc. The three most important references to English-language publications read as follows: Ref. 2: G. W. Kennerly, W. L. Patterson, Industr. and Engn. Chem. 48, 1917, 1956); Ref. 3: K. U. Ingold, J. E. Puddington, Industr. and Engn. Chem., 51, 185, 1959; Ref. 5: W. L. Hawkins, V. L. Lanza, B. B. Loeffler, W. Matreyek, F. H. Winslow, Rubber Chem. and Technol., 32, 1179, 1959.

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Mutual increase of...

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: December 6, 1960

Fig. 2.

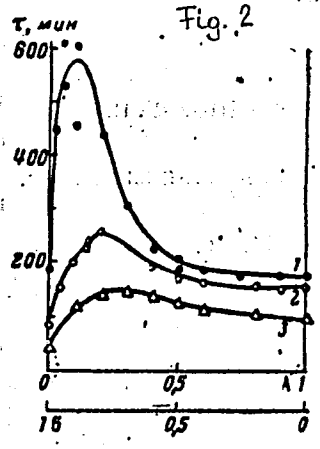

Fig. 2. Change of the induction period of polypropylene oxidation at 200°C as dependent on the composition of a mixture of p-hydroxyphenyl-β-naphthylamine (A) with mercapto benzimidazole (B)

Legend: Total concentrations of mixtures: (1) 0.1 moles/kg; (2) 0.05 moles/kg; (3) 0.025 moles/kg.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

DUDOROV, V.V.; LUKOVNIKOV, A.F.; BRAZHNIKOV, Ye.M.

Laboratory plant for the study of the oxidation kinetics of polymers at high oxygen pressures. Plast.massy no.10:53-54 '61. (MIRA 15:1)

(Polymers) (Oxidation)

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B101/B110

15.8061

AUTHORS: Dudorov, V. V., Neyman, M. B., Lukovnikov, A. F.

TITLE: Oxidation of polypropylene at high oxygen pressures. The dependence of induction periods on temperature and pressure

PERIODICAL: Plasticheskiye massy, no. 12, 1961, 3-7

TEXT: The oxidation kinetics of polypropylene (PP) is closely related to the problems of thermooxidative PP destruction and grafting of other polymers onto PP. The present paper deals with the examination of the induction period of PP oxidation at a p_{O_2} of 1-120 atm, and 110-140°C. The authors used isotactic PP with a molecular weight of approximately 200,000 separated from the commercial product by a method described by N. V. Mikhaylov et al. (Vysokomol. soyed., 1, 143 (1959)). At about 130°C, 150 kg/cm^2, this PP was used for producing films (0.10 mm thickness, or 10.0 mg/cm^2). The induction period was measured by the apparatus of Fig. 1 (detailed description see Plast. massy, no. 10 (1961)). A certain O_2 pressure was applied to the PP film sample. The pressure change in reaction

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Oxidation of polypropylene ...

space (2) due to O_2 absorption causes a deflection of membrane (7), which was optically transferred to scale (14) graduated in mm Hg. The induction period was defined as the time in which the pressure in the reaction space dropped by 5 mm. Reproducibility of measurements depended on the preliminary treatment of the reaction vessel and on the conditions of PP films storage. Therefore, a specially treated vessel and films with an induction period of 9.0 $\pm$ 0.5 min at 130°C and 20 atm were used for experiments. Special experiments showed that the induction period was not affected by variations of thickness and area of films. At an initial pressure of 120 atm and at 110-140°C, measurement of the pressure drop yielded an apparent induction period τ_{meas} of $\sim$80 min at 110°C, $\sim$27 min at 120°C, and $\sim$15 min at 130°. Experiments at 140° could only be continued to 60 atm, since inflammation occurred at higher p_{O_2}. The concave shape of the curves showed autocatalytic oxidation to set in at a high p_{O_2}. τ_{meas} decreased until $\sim$40 atm, and increased again at a higher p_{O_2}. This effect is due to an intense separation of volatile products at a high p_{O_2}, which

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Oxidation of polypropylene ...

almost compensated the pressure drop. The pressure rise caused by volatile products was measured by O_2 removal after short time of action (15-36 min). It followed the linear function $\log[p_{max}/(p_{max} - p)] = f(t)$; (t = temperature). The constant of pressure rise was determined from this function, and the maximum pressure rise from the curves for pressure rise. The curve for O_2 absorption (Fig. 7) was plotted by means of algebraic addition of the ordinates of pressure drop and rise. Therefrom, the true induction period τ was found. $\tau \ll \tau_{meas}$. Experimental data yielded:

$\tau = \tau_\infty + (\tau_1 - \tau_\infty)/p$ (1), where τ_∞ = induction period at $p \to \infty$;

$\tau_1 - \tau_\infty$ = difference between the induction periods for 1 atm and $p \to \infty$.

Since τ_1/τ_∞ was constant within the experimental errors (1.79-1.90), Eq. (1) was transformed into: $\tau = \tau_\infty (1 + 0.85/p)$ (2). $\log \tau$ is a linear function of $1/T$. The temperature coefficient $\gamma = 13{,}500\text{-}2300/p$ (3) and the factor of the exponential function

$\tau_o = 1.4 \cdot 10^{-(14 - 3.0/p)}$ (4) were determined. τ was calculated as a func-

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tion of pressure and temperature:

$\tau = 1.4 \cdot 10^{-14} \exp(13{,}500/T) \exp\left[(1/p)(6.9 - 2300/T)\right]$ (5). Under experimental conditions, $2300/T$ changes by 8% only. The value of this fraction was calculated for 120°C and substituted in Eq. (5). By resolving Eq. (5) into a series and by using its first two terms, the empirical Eq. (2) is obtained. There are 9 figures, 2 tables, and 7 references: 5 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: G. Natta, E. Beati, F. Severini, J. Polym. Sci., 34, no. 127, 685 (1959).

Fig. 1. Diagram of measuring apparatus. (1) Polymer sample; (2) reaction space; (3) thermostat; (4) regulating valves; (5) standard manometer; (6) stop valves; (7) membrane; (8) reaction vessel; (9) space with constant pressure; (10) illuminator; (11) glass; (12), (13) mirrors; (14) measuring scale; (15) funnel.
Legend: (a) Vacuum; (b) oxygen.
Fig. 7. Changes of pressure (curves 1 and 2) and oxygen absorption (curves 1' and 2') during oxidation at 110°C. Pressure: 1 and 1' at 60 atm; 2 and 2' at 120 atm.

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B110/B138

AUTHOR: Lukovnikov, A. F.

TITLE: Conference on the ageing and stabilization of polymers

PERIODICAL: Plasticheskiye massy, no. 4, 1962, 76-78

TEXT: The pervoye vsesoyuznoye Soveshchaniye po stareniyu i stabilizatsii polimerov (First All-Union conference on the ageing and stabilization of polymers) was held in Moscow 14-17 November, 1961 by the Uchenyy sovet po polimeram pri Prezidiume Akademii nauk SSSR (Polymer Research Council at the Presidium of the Academy of Sciences USSR), the Gosudarstvennyy komitet Soveta Ministrov SSSR po khimii (State Committee for Chemistry of the Council of Ministers USSR), and the Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya (Ministry of Higher and Secondary Specialized Education). 200 specialists from scientific institutes, universities, and central industrial laboratories in Moscow, Leningrad, Kiyev, Gor'kiy, Voronezh, Yaroslavl, Tambov, Kazan' etc, attended and 58 reports were given. The destruction of polyolefins by high temperature oxidation follows the radical chain mechanism with branches formed by thermal decomposition of

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Conference on the ageing and...

hydrogen peroxide. Their decomposition yields other products containing oxygen (water, aldehyde, acids, ketones, etc). Ye. N. Matveyeva, S. S. Khin'kis found the following decreasing order of heat resistance: high-pressure polyethylene, copolymer of ethylene with propylene, low-pressure polyethylene, polypropylene. Using paramagnetic electron resonance it was found that slightly active inhibitor radicals which only initiate oxidation at high temperatures are formed by inhibitor - radical reaction as a result of the rupture of kinetic chains (IKhF AS USSR). Phenol derivatives with aliphatic or aryl substites in positions 2, 4, and 6, biphenols, certain phenol sulfides, and secondary amines stabilize polyolefins. Additional stabilizers are being developed in the NIIKhimpolimer institute. Studies on atmospheric ageing, conducted in the NIIPP institute, showed that the destruction of polymers is especially high under intensive solar radiation. Benzotriazole and benzophenone are good photostabilizers. The heat resistance of PVC depends on the conditions of production (purity of starting materials, emulsifier, initiators, etc). Dehydrochlorination was found to be the basic mechanism in the thermal decomposition of PVC. Separated HCl catalyzes subsequent PVC decomposition. Stabilizers are therefore HCl acceptors. G. Ye. Gordon succeeded in raising

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the decomposition temperature by 60°C during the copolymerization of vinyl chloride with 10 % glycidyl methacrylate. A. A. Berlin proposed stabilization of PVC polymers with a system of conjugate bonds. R. A. Sorokina, G. N. Chelnokova and S. F. Rafikov reported on the decomposition mechanism of heterochain polyamides under the action of heat, light, and oxygen. N. V. Mikhaylov, A. G. Tokareva found that some organophosphorus compounds have stabilizing properties. N. S. Yenikolopov, P. A. Dudina, and L. V. Karmilova reported on the thermal and high temperature oxidation decomposition of polyformaldehyde. A. A. Berlin, N. B. Baranovskaya, A. P. Mizinin, and S. S. Sukhov showed that the polymer structure is rearranged and heat resistance increased by the action of heat. Improvement of the work of some laboratories and the construction of pilot plants for the production of heat and photostabilizers for polyolefins were recommended by the Mezhduvedomstvennyy koordinatsionnyy sovet po stareniyu i stabilizatsii polimerov (Interdepartmental Coordination Council for the ageing and stabilization of polymers) convened immediately after the above conference. The second meeting is scheduled for 1963.

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LUKOVNIKOV, A.F.; PONOMAREV, A.N.

Coprecipitation of microgram quantities of molybdenum with some inorganic precipitates. Radiokhimia 4 no.1:19-24 '62. (MIRA 15:4)

(Molybdenum--Analysis)

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DUDOROV, V.V.; SAMVELYAN, A.L.; LUKOVNIKOV, A.F.; LEVIN, P.I.

Decomposition of hydroperoxide groups in oxidized atactic polypropylene. Izv.AN Arm. SSR. Khim.nauki 15 no.4:311-320 '62. (MIRA 15:11)

1. Institut khimicheskoy fiziki AN SSSR.
(Propene) (Hydroperoxide) (Oxidation)

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B101/B186

11.1265

AUTHORS: Koritskiy, A. T., Lukovnikov, A. F.

TITLE: Formation of diaryl nitrogen oxide radicals on reaction between amines and peroxide radicals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 5, 1962, 1126-1129

TEXT: A study was made of the reaction of the inhibitors diphenyl amine and phenyl-β-naphthyl amine in frozen cumene irradiated with 1.6 Mev electrons either in absence of oxygen or at oxygen pressures between 5 and 10 atm. E. p. r. spectra were taken to test the formation of radicals. Results: (1) An inhibitor addition of 1- 3% to cumene hardly affected the yield and character of the resulting radicals. (2) $\dot{R}$ radicals, which disappear on heating above the melting point, form in the absence of oxygen. (3) In the presence of oxygen, $R\dot{O}O$ peroxide radicals are obtained. Heating above the melting point changes the e. p. r. spectrum of these radicals. A 1:1:1 triplet occurs which corresponds to the $Ar_2\dot{N}O$ spectrum. The formation of these diaryl nitrogen oxide radicals follows the reaction: $R\dot{O}O + HNAr_2 \longrightarrow ROOH + \dot{N}Ar_2$; $R\dot{O}O + \dot{N}Ar_2 \longrightarrow R\dot{O} + Ar_2\dot{N}O$.

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Formation of diaryl nitrogen oxide ...

Irradiation of the system cumene + O_2 + Ar_2NH above the melting point yields no $Ar_2\dot{N}O$ radicals. The instability of $\dot{R}$ radicals is explained by the reaction $Ar_2\dot{N} + \dot{R} \longrightarrow Ar_2NR$. (4) Experiments showed that $(C_6H_5)_2\dot{N}O$ radicals decompose in the presence and absence of O_2 owing to reaction with $\dot{R}$ or $R\dot{O}O$, yielding $RON(C_6H_5)_2$. (5) Irradiation of the system cumene + cumene hydroperoxide + amine also yields $Ar_2\dot{N}O$ radicals on heating above 0^oC. When irradiation begins, the $Ar_2\dot{N}O$ concentration first increases, then decreases to a limit which depends on the irradiation intensity. After irradiation has been stopped an after-effect occurs - a long-lasting increase in $Ar_2\dot{N}O$ concentration up to a limit which depends not so much on the hydroperoxide concentration as on the irradiation dose and irradiation temperature, and which follows a first-order reaction. The concentration of $Ar_2\dot{N}O$ radicals decreases immediately when irradiation is repeated. The decrease in $Ar_2\dot{N}O$

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Formation of diaryl nitrogen oxide ...

concentration on continuous irradiation and the after-effect are insufficiently explained by the experimental results. The former may be due to any radiolysis products delaying the radical formation, the latter to incomplete oxidation of the amine (e. g. into diaryl hydroxylamine) and subsequent oxidation by ROOH into $Ar_2\dot{N}O$. (6) The yield of paramagnetic particles remains unaffected by diphenyl amine, is increased by hydroperoxide additions, and is increased considerably by hydroperoxide + diphenyl amine. This is probably due to the excited $[ROOH \cdot HNAr_2]^*$ complex formed by an H· bond. Conclusion: A possible interaction between amines and peroxide compounds or their conversion products must be taken into consideration.There are 3 figures. The most important English-language references are: J. R. Thomas, J. Am. Chem. Soc., 82, no. 22, 5955 (1960); D. B. Denney, D. Z. Denney, J. Am. Chem. Soc., 82, 1389, 1393 (1960).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

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B101/B186

Formation of diaryl nitrogen oxide ...

PRESENTED: July 19, 1962, by V. N. Kondrat'yev, Academician

SUBMITTED: July 11, 1962

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S/190/63/005/002/006/024
B101/B102

AUTHORS: Khloplyankina, M. S., Lukovnikov, A. F., Levin, P. I.

TITLE: Mutual intensification of the effect of antioxidants (synergism). II. Basic manifestations of the effect of antioxidant mixtures

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 2, 1963, 195-200

TEXT: In the oxidation of 70% crystalline polypropylene at 200°C in oxygen (p_{O_2} = 200 mm Hg), single sulfur-containing compounds, amines and hydroxy amines as well as mixtures of these were studied as regards their effect on the induction period (min) of the oxidation. The total concentration of the stabilizers was 0.01 mole per kg of polymer. Results:

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

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B101/B102

Mutual intensification of ...

	I(25)	II(100)	III(680/350$^+$)	IV(180$^+$)	V(150)	VI(10)
A(20)	25	-	-	-	-	-
B(350$^+$)	475(1:4)	-	-	-	375(1:3)	-
C(19)	-	260(1:1.5)	-	-	550(1:3)	-
D(45)	90(1:1)	290(1:2)	-	-	320(1:3)	260 (4:1)
E(200)	250(1:4)	-	-	-	-	-
F(95)	170(1:1)	270(1:1)	-	-	-	-
G(75/65$^+$)	100 (1:1)	300 (1:4)	700	280 (1:3.5)	620 (1:19)	250$^+$ (1:1)
H(20/15)	60 (1:1)	220 (5:1)	60$^+$ (1:1)	180$^+$	150	65 (1:1)
I(25)	65$^+$ (1:2)	175 (1:2)	285$^+$	-	-	75 (1:1)
K(130/75$^+$)	125	-	800	280$^+$	-	-

A is phenyl-benzyl sulfide, B 2,2'-(6-tert-butyl-4-methyl phenol) sulfide; C tetramethylthiuram monosulfide; D tetramethylthiuram disulfide;

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APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

Mutual intensification of ... S/190/63/005/002/006/024
B101/B102

E 2,2'-diphenyl diamine disulfide; F 4,4'-diphenyl diamine disulfide; G mercapto benzimidazole; H mercapto benzothiazole; I dodecyl mercaptan; K α-naphthene; I diphenyl amine; II p-hydroxy diphenyl amine; III phenyl-β-naphthyl amine (Neozone D) IV phenyl-α-naphthyl amine (Neozone A); V p-hydroxy phenyl-β-naphthyl amine; VI 2,2,4-trimethyl dihydro quinoline. The figures following the letters representing the sulfides and amines represent the induction period of the individual compounds. The ratios indicated denote always amine:sulfide. The figures marked with + are related to 0.05 mole per kg of polymer. The maximum induction period was observed only with one definite ratio which differs for different components. The maximum induction period decreases with increasing temperature. The importance of such effects in practice is emphasized for combining amine-containing antioxidants with sulfur-containing rubber. There are 4 figures and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: July 25, 1961

Card 3/3

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 17896-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW 73
ACCESSION NR: AP3004701 S/0190/63/005/008/1152/1155 68

AUTHOR: Levin, P. I.; Kirpichnikov, P. A.; Lukovnikov, A. F.; Khloplyankina, M. S.

TITLE: Mutual improvement of the effectiveness of antioxidants (synergism). 3. Manifestation of synergism in mixtures of alkylated phenol sulfide with certain phosphites

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 8, 1963, 1152-1155

TOPIC TAGS: antioxidant, synergism, antioxidant synergism, oxidation, oxidation inhibition, polypropylene, polypropylene oxidation, induction period, 2-2'-thiobis(6-tert-butyl-4-methylphenol), SAO-6, 2-6-tert-butyl-4-methylphenyl 1-2-phenylene phosphite, 1-2-Alpha-naphthyl 1-2-phenylene phosphite, tris(p-tert-butylphenyl) phosphite, antioxidant effectiveness, tris-[p-(α-methylbenzylidene)phenyl] phosphite, phosphorous acid, phosphorous acid esters, tris(p-nonylphenyl)phosphite, Polygard

ABSTRACT: The synergistic antioxidant effect of mixtures of 2,2'-thiobis(6-tert-butyl-4-methylphenol) (antioxidant SAO-6) with individual triesters of phosphorus acid has been studied for the case of the oxidation of isotactic polypropylene (PP) at 200C and 200 mm Hg of oxygen. The following triesters of phosphorous

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 17896-63
ACCESSION NR: AP3004701

4

acid were used: 2,6-tert-butyl-4-methylphenyl 1,2-phenylene phosphite (PKIF), α-naphthyl 1,2-phenylene phosphite PK-α-NF), tris-[p-(α-methylbenzylidene)phenyl] phosphite (phosphite of the reaction product of phenol with styrene) (FP-24), tris(p-nonylphenyl) phosphite (Polygard, TNF), and tris(p-tert-butylphenyl) phosphite (TTBPF). Single or mixed antioxidants were added in amounts of 0 to 0.05 mol/kg. Their effectiveness was evaluated by the induction period of oxidation, τ. The results of the study are given in the form of plots of antioxidant concentration versus induction period. Addition of individual antioxidants produced a considerable inhibitory effect. Thus, τ increased from 3—5 min for uninhibited PP to about 290 min for PP in the presence of 0.05 mol/kg SAO-6 or 0.05 mol/kg PKIF. The effectiveness of individual antioxidants increased in the sequence: TNG < FP-24 < PK-α-NF < PKIF < SAO-6. Mixtures of individual phosphites with SAO-6 produced a synergistic effect in all cases; the induction period increased in some instances to about 500 min. Long induction periods can be obtained not only by increasing the total concentration of the components mixed in a given ratio but also by increasing the concentration of one component at a constant concentration of the other. It is concluded that mixtures of SAO-6 with triesters of phosphorous acid are very effective stabilizers of such polymers as PP and that the effectiveness of the mixtures considerably exceeds that of the individual compounds. Orig. art. has: 4 figures and 1 table.

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APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 17896-63
ACCESSION NR: AP3004701

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 25Dec61 DATE ACQ: 28Aug63 ENCL: 00

SUB CODE: CH, MA NO REF SOV: 005 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, A.F.; FEDOROV, B.P.; VASIL'YEVA, A.G.; KRASNYANSKAYA, E.A.; LEVIN, P.I.; GOL'DVARB, Ya.L.

Benzimidazole derivatives as inhibitors of the oxidation of polypropylene and the effect of p-hydroxydiphenylamine on their effectiveness. Vysokom. soed. 5 no.12:1785-1789 D '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR i Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

KARGIN, V.A., akademik; NEYMAN, M.B., prof.; BUCHACHENKO, A.L., kand. khim. nauk; MIKHAYLOV, V.V.; MASLOVA, I.P.; LUKOVNIKOV, A.F., kand. khim. nauk; MATVEYEVA, Ye.N.; BERLIN, A.A., prof.; YANOVSKIY, D.M., kand. khim. nauk; POPOVA, Z.V., kand. khim. nauk; LEVANTOVSKAYA, I.I.; KOVARSKAYA, B.M., kand. khim. nauk; ANDRIANOV, K.A., prof.; KUZ'MINSKIY, A.S., prof.; SLONIMSKIY, G.L., prof.; MAKUNI, Ye.B., tekhn. red.

[Aging and stabilization of polymers] Starenie i stabilizatsiia polimerov. Moskva, Izd-vo "Nauka," 1964. 330 p. (MIRA 17:3)

1. Akademiya nauk SSSR. Institut khimicheskoy fiziki.
2. Chlen-korrespondent AN SSSR (for Andrianov).

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

ACCESSION NO: AP4017630 S/0190/64/006/002/0201/0205

AUTHORS: Lukovnikov, A. F.; Fedorov, B. P.; Stoyanovich, F. M.; Bulgakova, T. A.; Levin, P. I.

TITLE: Arylamines of the thiophene series with a thioether group as antioxidants

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 2, 1964, 201-205

TOPIC TAGS: antioxidant, polypropylene, polypropylene antioxidant, thiophene, thenyl compound, thioether group, arylamine, stabilization, functional stabilizing group, phenyl compound, Neozone, sulfide, oxidation, p phenolamine, induction period

ABSTRACT: The performance of sulfides of the thiophene series containing an arylamine group as inhibitors of polypropylene oxidation was studied at 200C in an atmosphere of oxygen. It was found that the arylamines of the thiophene series are generally equal (in some instances even superior) as antioxidants to the commercial Neozones. It was also observed that the presence of a thenyl or a benzyl radical in the arylamine molecule had a favorable effect on the effectiveness of the compound. The sulfides of the thiophene series as such do not possess any anti-oxidative properties in respect to polypropylene. It was also shown that the

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

ACCESSION NO: AP4017630

thioether group does not enhance the effectiveness of arylamine either when added separately or when the thioether group forms a part of the amine molecule. The presence of a thioether group in p-aminophenol derivatives results in increased effectiveness of the compounds as antioxidants, especially where the sulfide sulfur is directly bound to the thiophene group. Orig. art. has: 1 table and 3 charts.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR, (Institute of Organic Chemistry AN SSSR); Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 19Jul62 DATE ACQ: 23Mar64 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 63641-65 EPF(c)/EPR/EWG(j)/EWP(j)/EWT(m)/EWG(m)/EWP(b)/T/EWP(t) Pc-4/Pr-4/Ps-4
ACCESSION NR: AP5017963 IJP(c)/RPL UR/0062/65/000/006/1093/1096
RM/WW/RWH/JD547.024+542.94

42
41
B

AUTHOR: Sklyarova, Ye. G.; Lukovnikov, A. F.; Khidekel', M. L.; Karpov, V. V.

TITLE: Phenoxy radicals as oxidation inhibitors and their interaction with hydroperoxides

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 6, 1965, 1093-1096

TOPIC TAGS: phenoxy radical, oxidation inhibitor, hydroperoxide, polypropylene

ABSTRACT: The inhibiting properties of some phenoxy radicals prepared by oxidizing 2,4,6-tri-tert-butylphenol (I), 2,4,6-triphenylphenol (II), and 4,4'-dihydroxy-3,5,3',5'-tetra-tert-butyldiphenolmethane (III) were tested on the oxidation of isotactic polypropylene, and were found to be quite effective. The kinetics of the reaction between 2,6-di-tert-butyl-4(3,5-di-tert-butyl-4-oxo-dicyclohexa-2,5-dienylidenemethyl)phenoxyl (the "galvinoxyl" radical) and the hydroperoxide formed during the oxidation of polypropylene were studied by means of iodimetry and ESR spectra. The reaction was found to be bimolecular and first-order with respect to the radical. The rate constants for 60.5, 45, and 35C are 3.16, 1.5, and 0.79 L/mole·min, respectively, and the activation energy is

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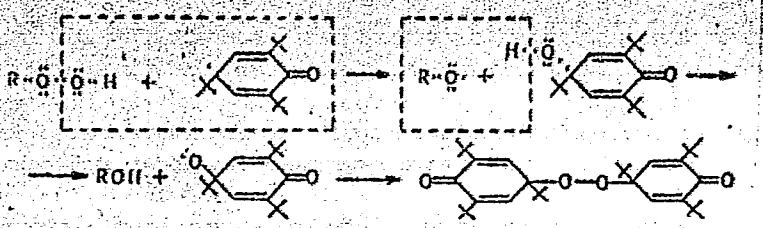
L 63641-65

ACCESSION NR: AP5017963

10 kcal/mole. A study of the products of the reaction between tri-tert-butylphenoxyl with polypropylene hydroperoxide showed that they were identical to the products of oxidation of the radical by oxygen; hence, the hydroperoxide acts as an oxidizing agent. The reaction may be represented as follows:



A cage effect takes place in this case: the RO• radical detaches a hydrogen atom from the phenol formed; then two radicals dimerize, yielding a peroxide. Orig. art. has: 3 figures and 4 formulas.

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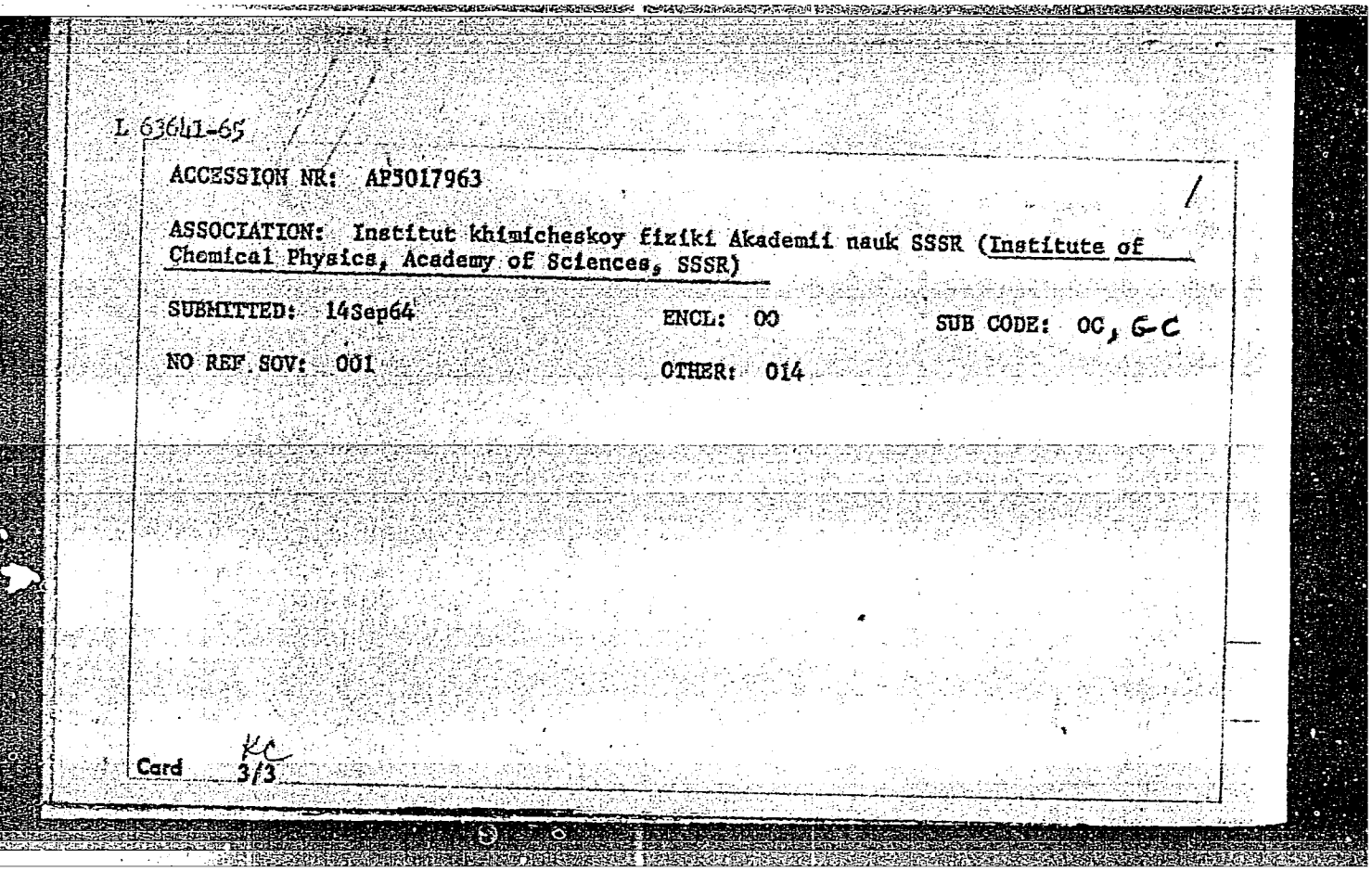

L 63641-65

ACCESSION NR: AP5017963

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 14Sep64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 001 OTHER: 014

Card 3/3

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 21560-66 EWT(m)/EWP(j) IJP(c) RM

ACC NR: AP6009794 SOURCE CODE: UR/0062/000/002/0268/0274 27 B 26

AUTHOR: Fedorov, B. P.; Lukovnikov, A. F.; Mamedov, R. M.; Yedemskaya, V. V.; Sukhov, V. A.

ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimichechoy fiziki Akademii nauk SSSR); Institute of Organic Chemistry im. N. D. Zelinskiy, Academy of Sciences SSSR (Institut organicheskoy khimii Akademii nauk SSR)

TITLE: Synthesis of some S-substituted 2-(mercaptomethyl)benzimidazoles and a study of their inhibition of polypropylene oxidation

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1966, 268-274

TOPIC TAGS: polypropylene, oxidation inhibition, polymer additive, benzimidazole derivative

ABSTRACT: Previous work had shown that the effectiveness of 2-mercapto-benzimidazole derivatives as inhibitors of polypropylene oxidation depends on the presence of the sulfhydryl group, or on the nature of the substituents at the sulfhydryl group. The present work deals with the synthesis and properties of S-substituted 2-(mercaptomethyl)benzimidazoles. A number of compounds were prepared and their inhibiting effect on the oxidation of isotactic polypropylene at 200C and pO_2 = 200 mm was investigated. The compounds and the induction periods observed on addition of inhibitors are given in the table:

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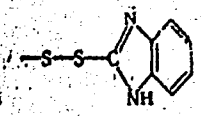
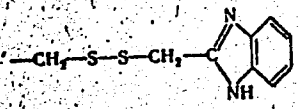
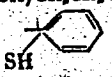
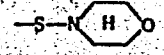
APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 21560-66

ACC NR: AP6009794

Table 1. Results of measuring induction periods of benzimidazole derivatives

Number	R	mp, °C	Induction period in min, for concentration M/kg			
			0,02	0,05	0,07	1,0
I	—SH	305—308 [1]	55	120	210	265
Ia		228—230 [1]	15	190	270	295
II	—CH_2SH	156—158 [2]	45	55	70	80
IIa		180—181 [1]	45	55	50	80
III	—$CH(SH)CH_2CH_3$	222	10	50	100	150
IV	—$CH(SH)CH_2CH_2CH_2CH_3$	209—210	20	25	30	40
V		266—267	12	15	18	35
VI		206—209 [1]	15	38	50	80

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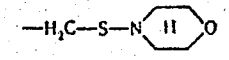
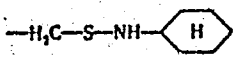
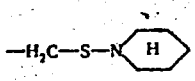
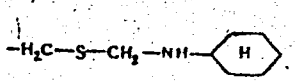
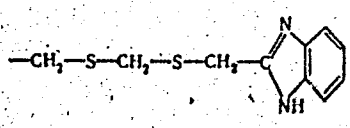
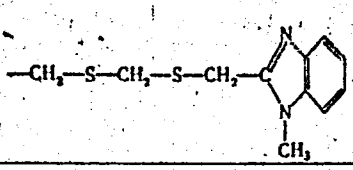
"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 21560-66
ACC NR: AP6009794

Table 1. (Cont.)

Number	R	mp, °C	Induction period in min. for concentration M/kg			
			0,02	0,05	0,07	1,0
VII		97—98 [2]	20	40	60	90
VIII		218—219 [3]	20	70	80	100
IX		245—247 [3]	30	140	220	300
X		182—183	20	75	90	100
XI		219—220 [3]	10	30	40	40
XII*		207—208	20	30	80	90

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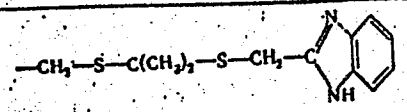
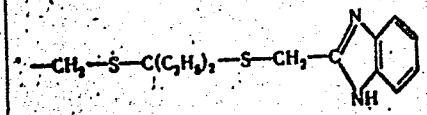
APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

Table 1. (Cont.)

Number	R	mp, °C	Induction period in min. for concentration M/kg			
			0,02	0,05	0,07	1,0
XIII		223—224	25	55	180	250
XIV		249—250	10	10	20	20
XV	$-H_2C-S-CH_2CH_2CH_2CH_3$	145—146 [2]	15	18	20	180
XVI	$-H_2C-S-CH_2CH_2CH_2CH_3$	132—133	20	340	450	400
XVII	$-H_2C-\overset{\overset{O}{\downarrow}}{S}-H_2C-C_6H_5$	141—142 [2]	50	75	100	110
XVIII	$-H_2C-\overset{\overset{O}{\downarrow}}{S}-H_2C-C_6H_5$	165—166	30	60	105	120
XIX	$-H_2C-SO_2-H_2C-C_6H_5$	206—208	Inactive			

*In (XII) both hydrogen atoms at the NH groups are replaced by CH_3 groups.

Card 4/5

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 21560-66
ACC NR: AP6009794

The authors found that in the presence of hydroperoxides some amines react with mercaptans to form sulfenamides. They suggest that this may account for the synergistic effects observed when mixtures of amines and mercaptans are used as antioxidants. Orig. art. has: 2 figures and 1 table. [VS]

SUB CODE: 11/ SUBM DATE: 12Nov63/ ORIG REF: 006/ OTH REF: 001
ATD PRESS: 4219

Card 5/5

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 28453-66 EWT(m)/EWP(j) RM

ACC NR: AP6018120 (A) SOURCE CODE: UR/0191/66/000/006/0010/0011

AUTHOR: Lazareva, N. P.; Lukovnikov, A. F.

16
B

ORG: none

TITLE: Causes of discoloration of stabilized high-density polyolefins

SOURCE: Plasticheskiye massy, no. 6, 1966, 10-11

TOPIC TAGS: polyolefin, discoloration, titanium compound, phenol, discoloration prevention

ABSTRACT: A study has been made of the causes of the yellow discoloration of polyolefin products prepared in the presence of Ziegler-Natta catalysts and stabilized with alkylated phenols. It was shown that the discoloration of polyolefins is due to the presence of a residue of titanium compounds from the catalysts. These compounds probably react with the hydroxyl groups of the phenols to form colored compounds:

$$TiCl_4 + HOAr \longrightarrow TiCl_3OAr + HCl$$

Because the presence of the catalyst residue lowers the content of phenol hydroxyl groups in the polymer, the stabilizing effect of phenols is impaired. To prevent the formation of colored titanium compounds, it is proposed either that the hydrogen in the phenol hydroxyl group be substituted or that the OH-group

Card 1/2

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 28453-66

ACC NR: AP6018120

O

be hindered with bulky groups. However, the most effective means of preventing discoloration is through removal of catalyst residues from polyolefins. Orig. art. has: 2 tables.

[BO]

SUB CODE: 07, 11/ SUBM DATE: none/ ORIG REF: 008/ OTH REF: 008/ ATD PRESS: 5.006

Card 2/2 LC

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, A.I.

GTRSPL Vol. 5-No. 1 Jan. 1952

Neiman, M.B., Lukovnikov, A.I. and Iofa, B.Z., Synthesis of 2-C^{14}-propene, 493-6

Akademiya Nauk, S.S.S R., Doklady Vol. 78, No. 3, 1951

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, A. V.

"Improving the Protection Against Short Circuits in Agricultural Distribution Networks." Cand Tech Sci, Chair of Production and Distribution of Electrical Energy in Agriculture, Moscow Inst of Mechanization and Electrification of Agriculture, Min Higher Education USSR, Moscow, 1954. (KL, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: SUM No. 556, 24 Jun 55

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

Lukovnikov, A. V.

AID P - 4024

Subject : USSR/Power

Card 1/1 Pub. 26 - 13/31

Author : Lukovnikov, A. V. and V. Ya. Rubtsov, Engs.

Title : Using automatic switches to protect rural power plants.

Periodical : Elek. sta., 11, 40-42, N 1955

Abstract : Types of automatic switches used at rural power plants are discussed and their data given. Two diagrams.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

Lukovnikov, A. V.

USSR/Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis. B-0

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3786

Author : Lukovnikov A.V., Neyman M.B.

Title : Kinetic Method of Utilization of Tagged Atoms in the Investigation of Mechanism of Chemical and Biological Processes. IV. Formation of CO and CO_2 on Oxidation of Butane.

Orig Pub : Zh. fiz. khimii, 1955, 29, No 8, 1410-1421

Abstract : Rate of formation and of expenditure of CO during oxidation of C_4H_{10} were determined. Only 1-4% CO_2 are formed from CO, the remaining 96-99% are formed from other predecessors. CO_2 was converted to $BaCO_3$. CO was oxidized with I_2O_5 and the resulting CO_2 was absorbed in $Ba(OH)_2$. In experiments with $C^{14}O$ and $C^{14}O_2$ activity of $BaC^{14}O_3$ was determined with an end-window counter. Non-occurence of the reaction $C^{14}O_2 + CO \rightleftarrows C^{14}O + CO_2$ was demonstrated by special...

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3786

experiments on oxidation of C_4H_{10} in the presence of $C^{14}O_2$ and CO. The CO isolated upon completion of the experiment was found to be inactive. Experiments on oxidation of C_4H_{10} have shown that with addition of $C^{14}O$ the CO_2 formed is of very low specific activity. Experiments with addition of small amounts of $C^{14}O$ and CO_2 have revealed that in the course of the reaction the specific activity α_{CO} drops sharply while specific activity α_{CO_2} increases at first, attains a maximum 2.7 minutes after the beginning of the reaction, and decreases thereafter. From the kinetic method formula $/ CO_2 / d \alpha_{CO_2} / dt = w_1 \alpha_{CO} - w_2 \alpha_{CO_2}$ it was found that if the rate of formation w_1 of CO_2 from CO is equal to the total rate of formation of CO_2, w_2, the correlation $\alpha_{CO} = \alpha_{CO_2}$ holds at the maximum of α_{CO_2}. Experiments have shown that at the maximum $\alpha_{CO} \approx 27 \alpha_{CO_2}$.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

EBIN, L.Ye., doktor tekhn. nauk, prof.; BYSTRITSKIY, D.N., kand. tekhn. nauk; LUKOVNIKOV, A.V.; PAN'KIN, V.V., inzh.; DUDINA, V.Ye.

[Auxiliary power plants and electrical systems for increasing the reliability of rural electric power distribution] Rezervnye elektrostantsii i elektroagregaty dlia povysheniia nadezhnosti sel'skogo elektrosnabzheniia. Moskva, Otdel tekhnicheskoi informatsii VIESKh, 1960. 70 p. (MIRA 15:4)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrifikatsii sel'skogo khozyaystva.
(Rural electrification)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

BERZIN, A.A., inzh.; BORODIN, I.F., kand. tekhn. nauk; LUKOVNIKOV, A.V., kand. tekhn. nauk; PROINNIKOVA, M.I., kand. tekhn. nauk; SERGOVANTSEV, V.T., kand. tekhn. nauk; YURASOV, V.V., kand. tekhn. nauk; BURGUCHEV, S.A., zasl. deyatel' nauki i tekhniki RSFSR doktor tekhn. nauk, prof., red.; NIKITINA, V.I., red.; SOLODENIKOVA, G.A., red.; SOKOLOVA, N.N., tekhn. red.

[Course on elelctric power plants, substations, and power systems] Praktikum po elektricheskim stantsiiam, podstantsiiam i sistemam. [By] A.A.Berzin i dr. Moskva, Sel'khozizdat, 1963. 303 p. (MIRA 16:12)

(Electric power plants)
(Electric power distribution)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, A.V.; NIKITINA, V.M., red.

[Fundamentals of safety engineering and fireprevention techniques] Osnovy tekhniki bezopasnosti i protivopozharnoi tekhniki. Moskva, Izd-vo "Kolos," 1964. 238 p.
(MIRA 17:7)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, F.A.

Increasing yeast output and reducing the costs of production.
Gidroliz. i lesokhim.prom. 15 no.1:21-22 '62.
(MIRA 18:3)

1. Vyborgskiy tsellyulozno-bumazhnyy kombinat.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

T8729-65 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l) Pf-4 JD

ACCESSION NR: AT5003082 S/2529/63/000/077/0148/0149

AUTHOR: Lukovnikov, I. F.; Peshkov, G. K.; Sofronov, Yu. D. (Candidate of technical sciences)

TITLE: Machine for testing fatigue of flat specimens with a prescribed strain

SOURCE: Kazan. Aviatsionnyy institut. Trudy, no. 77, 1963. Stroitel'naya mekhanika, 148-149

TOPIC TAGS: metal fatigue, plate fatigue, endurance test, fatigue testing

ABSTRACT: A machine was designed for testing the fatigue of flat specimens with a prescribed strain. The article includes an overall view of the machine, and the electrical diagram of the device for fixing the moment of failure. The design of the loading device and the device for fixing the moment of failure of the specimen are the original features of this machine. The machine can load simultaneously 8 specimens on 4 levels of stress, and at one setting it can yield data for plotting the entire endurance curve. Fig. 1 of the Enclosure is an end view of the loading device and also shows the device for fixing the moment of failure. Orig. art. has: 3 figures.

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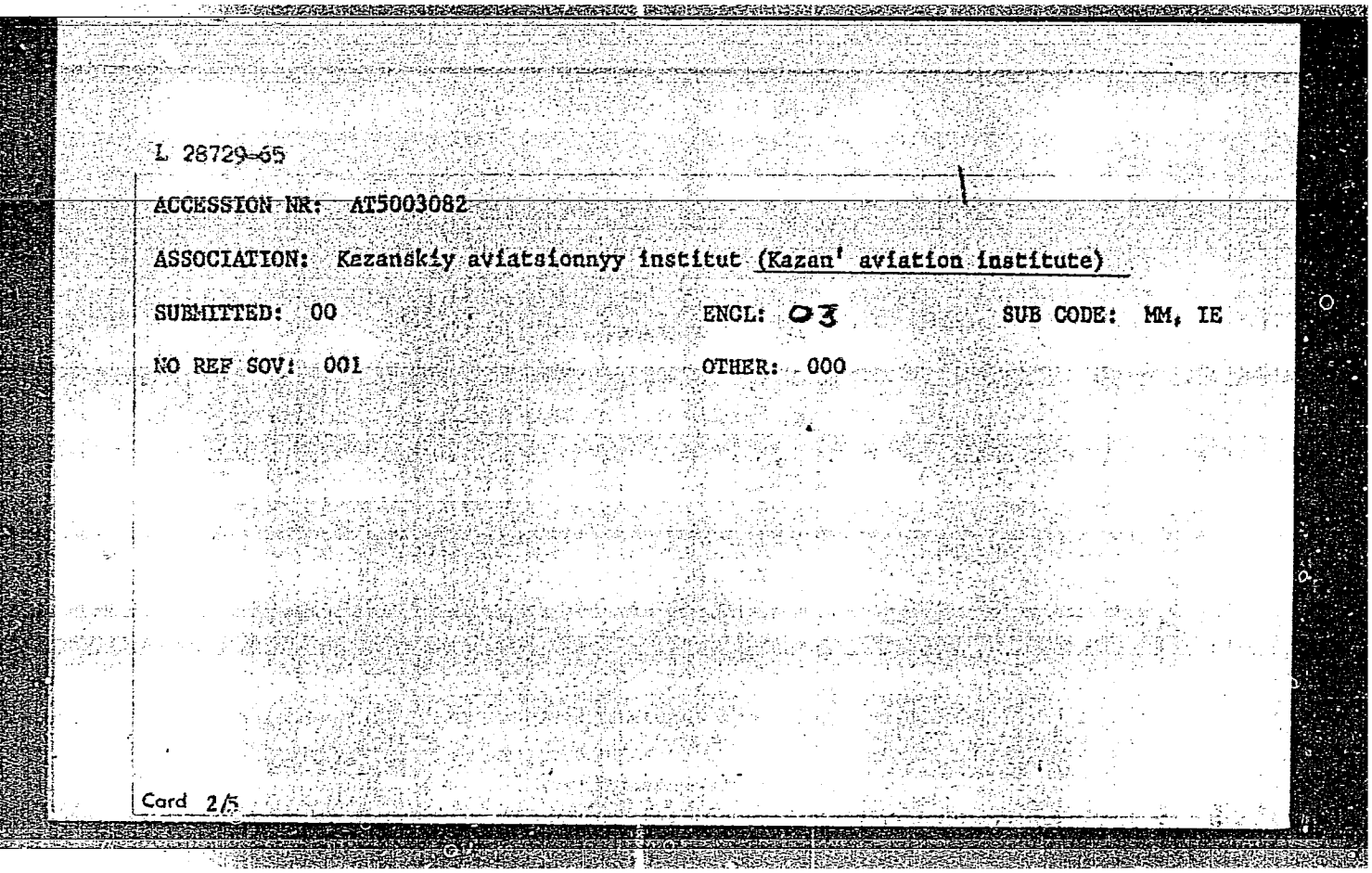

L 28729-65

ACCESSION NR: AT5003082

ASSOCIATION: Kazanskiy aviatsionnyy institut (Kazan' aviation institute)

SUBMITTED: 00 ENCL: 03 SUB CODE: MM, IE

NO REF SOV: 001 OTHER: 000

Card 2/5

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, S.F., inzh.

Device for adjusting the circular track in the assembly of rotary kilns. Mont. i spets. rab. v stroi. 24 no.5:27-28 My '62. (MIRA 15:5)

(Kilns, Rotary)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOV, V. F.

LUKOVNIKOV, V. F.: "The stability of rectangular stripand of an I beam with complex transverse and linear loads". Riga, 1955. Lativian State U. (Dissertations for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

S/137/62/000/011/003/045
A052/A101

AUTHORS: Chukhlrov, M. V., Lukovnikov, Yu. D.

TITLE: Structure and properties of Mg-Th alloy ingots produced by the dip method

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1962, 22, abstract 11G148 (In collection: "Issled. splavov tsvetn. metallov". 3. Moscow, AN SSSR, 1962, 163 - 168)

TEXT: To prepare alloys, Mg-1, MgC-1 ingots were fused in steel crucibles and then they were refined for 5 minutes at 720°C with ВИ-3 (VI-3) flux. Mg-Zr addition alloy, 10% of the charge weight, was added at 790 - 800°C. Th was added at 800°C along with flux containing 55% KCl, 28% $CaCl_2$, 15% $BaCl_2$ and 2% HF. After adding Th and the final refining with VI-3 flux during 7 - 8 minutes the alloys were held at 730 - 750°C and poured into a preheated mold. The distribution of alloying components and Fe admixture over the height of ingots of various compositions, depending on the holding time, shows that in all cases a liquation of Th and Zr by specific gravity takes place with the result that the concentra-

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tion of these elements in the bottom part of the alloy increases. In some cases the liquation of Fe is observed, the degree of which increases with holding time. The liquation of Mn is not revealed. An addition of Th in tested amounts to Mg and alloys of the Mg-Mn system does not result in a finer structure. An increase of Th and Mn content in ingots of alloys of the Mg-Th-Mn system reduces the elongation and increases to a certain degree the strength.

L. Vorob'yeva

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

45229

S/806/62/000/003/014/018

AUTHORS: Chukhrov, M. V., Lukovnikov, Yu. D.

TITLE: Structure and properties of magnesium-thorium-alloy castings obtained by the immersion method.

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniye splavov tsvetnykh metallov, no.3, 1962, 163-168.

TEXT: Four alloys, Mg-3.5Th, Mg-2.5Th-0.6Mn, Mg-3.6Th-1.8Mn, and Mg-3.8Th-0.8Zr, were tested. The methods of preparation are detailed. Upon introduction of the Th and final flux refining, the alloys were held at 730-750° for some 10 min and were poured into a mold preheated to a dark red glow. The melt is then held in the mold for 0.5 to 1.0 hr at 700-730°C, and the mold was then immersed into a tank with running water at 11 cm/min. Liquation of Th according to specific gravity is observed in every instance, so that the bottom of the ingot is more Th-rich. Similarly appreciable liquation of Th according to specific gravity is observed in the Mg-Th-Zr alloy. Some liquation of small additions of Fe is also observed. The degree of Fe and Zr liquation increases with holding time. Mn liquation was not observed. The specimen-sampling geometry of the ingot is depicted, also the macrostructure of typical ingots; the Mg-Th-Zr alloy exhibits the finest-grain structure. The structure of the other 3 alloys is columnar. Thus it is concluded that the addition of Th to Mg and to alloys of the Mg-Mn system, within the range of concentrations tested, does not result in a comminution of the structure. No substantial difference in the size

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of the macrograin as a function of the holding time could be observed. The gradual increase in coarseness of grain of the Mg-Th and Mg-Th-Mn alloys from the bottom to the top of the ingot is attributed to the enrichment of the lower portion with Fe. The Mg-Th microstructure consists of a Mg solid solution and a eutectic with a MgTh compound which, according to literature sources, is Mg_5Th. In the Mg-Th-Zr alloy with less than 1% Zr, the Zr joins in a ternary solid solution and does not constitute an independent phase. These alloys, therefore, differ in microstructure from the Mn-Th alloys in the grain size and the thickness of the dendrite branches only. All three microstructures look alike. The highest tensile strength (16.2-16.7 kg/mm^2) was exhibited by the Mg-Th-Zr alloys, whereas the Mg-Th and Mg-Th-Mn alloys are considerably less strong (5-7.5 kg/mm^2). This difference is attributed to the significantly finer-grained structure of the Mg-Th-Zr-alloy structure. Greatest elongation: Mg-Th alloy (10.8-13.3%); intermediate elongation: Mg-Th-Zr alloys (7.2-10.2%); lowest elongation: Mg-Th-Mn alloys with elevated alloying-element content. Mg-Th-Mn alloys with low alloying-element content have an elongation comparable with that of the Mg-Th-Zr alloys. Thus, it appears that an increase in Th and Mn content reduces the elongation and increases somewhat the strength of an alloy. There are 5 figures and 2 tables; no references.

ASSOCIATION: None given.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

L 18530-66 EWT(1)/EWA(h)
ACC NR: AP6002389 SOURCE CODE: UR/0250/65/009/012/0791/0793

AUTHOR: Avdeyev, V. N.; Aleksandrov, V. K.; Lukovnikov, Yu. N. 18 3

ORG: none

TITLE: Microminiaturization of helical filaments for lamps and tubes

SOURCE: AN BSSR. Doklady, v. 9, no. 12, 1965, 791-793

TOPIC TAGS: microminiaturization, microminiature filament

ABSTRACT: The development of a new helix-winding head, which corresponds to a special formula for maximum filament tension, is reported; the head permits winding the filament on a "dash" type base. The filament tension in the older B.282.05 type head used to be 26 g; the new microhelix head uses a tension of 2 g. Formulas and curves characterizing operation of the new head are presented. An experimental microhelix of 30 μ diameter made from 8-μ wire is shown. Orig. art. has: 2 figures, 3 formulas, and 1 table.

SUB CODE: 09 / SUBM DATE: 16Jun65 / ORIG REF: 009 / OTH REF: 001

Card 1/1

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

IL'INA, N.A.; LUKOVNIKOVA, A.P.; ABRAMOV, V.S.

Reactions of aldehydes and ketones with phosphorous acid amides. Report No.5: Action of α-chloro-substituted aldehydes and ketones on di-β-chloroethylphosphorous acid diethylamide. Trudy KKHTI no.30:40-44 '62. (MIRA 16:10)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LIPKIN; STEPANOV; LUKOVNIKOVA, A.Ye.

Defective fibers presented as a semifinished product. Tekst. prom. 19 no.7:22-25 Jl '59. (MIRA 12:11)

1.Rabotniki Yegor'yevskogo melanzhevogo kombinata (for Lipkin, Stepanov).

(Textile industry--Quality control)
(Dyes and dyeing--Nylon)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

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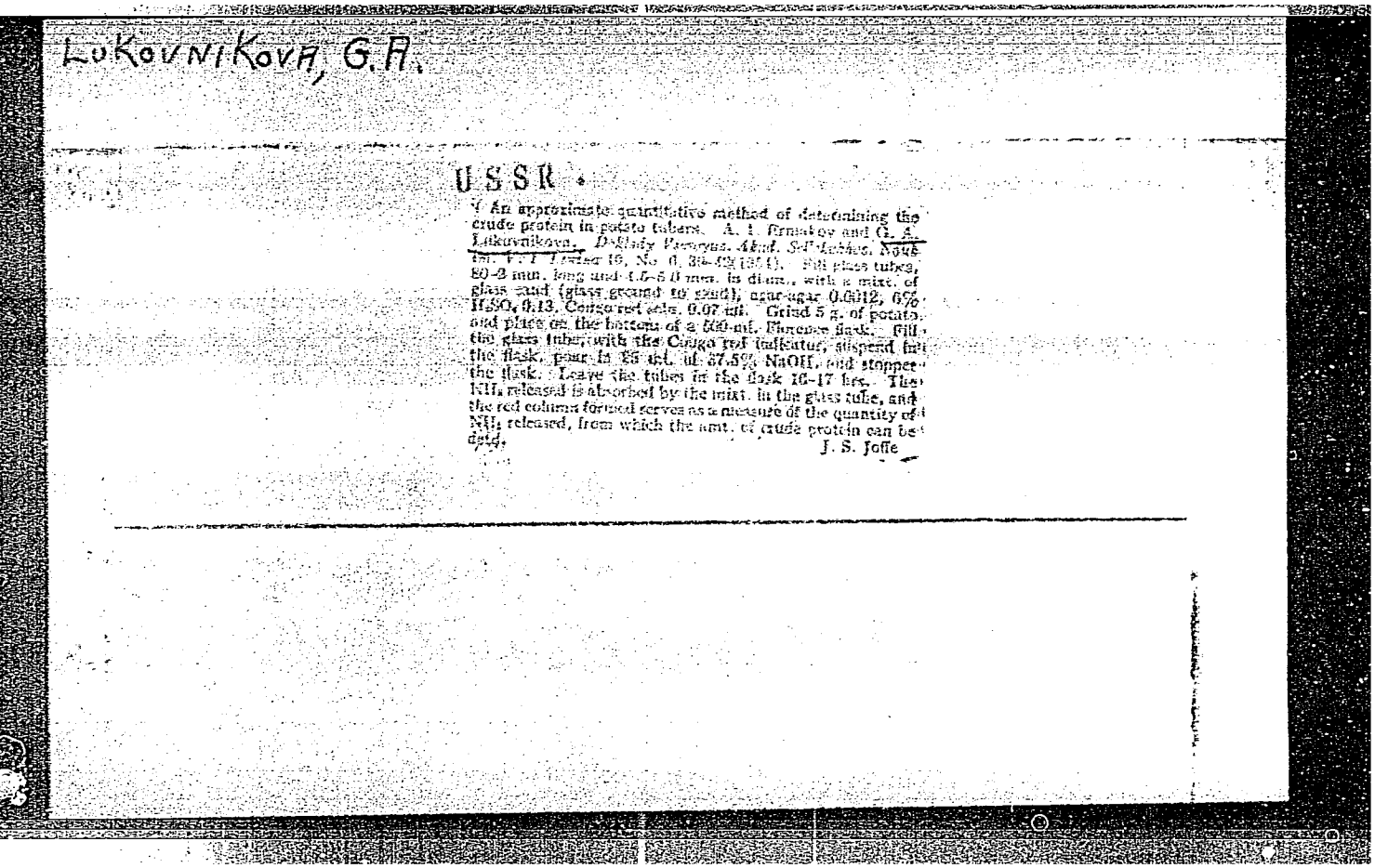

LUKOVNIKOVA, G.A.

USSR

An approximate quantitative method of determining the crude protein in potato tubers. A. I. Ermakov and G. A. Lukovnikova. *Doklady Vsesoyuz. Akad. S-kh. Nauk im. V. I. Lenina* 16, No. 6, 38-42(1951). 500 glass tubes, 80-3 mm. long and 4.5-5.0 mm. in diam., with a mixt. of glass sand (glass ground to sand), agar-agar 0.0312, 6% H_2SO_4 0.13, Congo red soln. 0.07 ml. Grind 5 g. of potato and place on the bottom of a 500-ml. Pirogov flask. Fill the glass tube with the Congo red indicator, suspend in the flask, pour in 25 ml. of 37.5% NaOH, and stopper the flask. Leave the tubes in the flask 16-17 hrs. The NH_3 released is absorbed by the mixt. in the glass tube, and the red column formed serves as a measure of the quantity of NH_3 released, from which the amt. of crude protein can be detd.

J. S. Joffe

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA - G.A.

Biochemical study of cauliflower. G. A. Lukovnikova. *Trudy Prikhd. Botan. Genet. i Selekhii* 31, No. 1, 193-200 (1954); *Referat. Zhur. Khim., Biol. Khim.* 1955, No. 12544. —A discussion of the chem. compn. of *Brassica cauliflora* and of a variety of factors influencing it. Cauliflower was found to possess more nutritive value than cabbage and many other vegetables. Its dry matter was high and it contained a greater percent of protein and vitamin C than many other vegetables. B. S. Levine

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G A

A rapid method for the determination of "crude" protein in potatoes and cabbage. A. I. Ermakov and G. A. Lukovnikova. *Trudy Prikład. Botan., Genet. i Selekcii* 31, No. 1, 203-9(1954); *Referat. Zhur. Khim., Biol. Khim.* 1955, No. 12560.—A rapid method was developed for the approx. detn. of crude protein (total of proteins and *N* compds.) in potato tubers, heads of cabbage, and fodder beets. The method is based on the hydrolysis of the proteins by strong alkali and the liberation of NH_3. The concn. of the latter is detd. with the aid of indicator tubes filled with H_2SO_4 and Congo red. The color end points of these are calibrated and standardized and are converted into percentage of "crude" protein on the fresh wt. basis. Max. deviation of results by this method from results with Kjeldahl method did not exceed 0.5%.

B. S. Levine

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A.

LUKOVNIKOVA,G.A.

Effect of mineral fertilizers on the amount of nitrous substances and starch in the potato. Biokhim. pl. i ovoshch. no.3:277-290 '55 (MLRA 8:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut rasteniyevodstva Vsesoyuznoy Akademii sel'skokhozyaystvennykh nauk imeni Lenina
(Fertilizers and manures) (Potatoes)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

G. A. LUKOVNIKOVA, V. I. IVANOV, D. I. LISITSIN, M. S. BARDINSKAYA, M. I. SMIRNOVA-IKONNIKOVA, Yu. V. PERUANSKIY,

"On carbohydrates of plant origin.

The Chemistry and Metabolism of Carbohydrates in Animal and Plant Organisms. Conference in Moscow. January 28 to January 30 1958.

(VAN SSSR, No. 6, 58)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

YERMAKOV, A.I.; LUKOVNIKOVA, G.A.

Influence of natural conditions and methods of cultivation on the ascorbic acid and carotene content of fruits and vegetables. Vitaminy no.4:209-217 '59. (MIRA 12:9)

1. Vsesoyuznyy institut rasteniyevodstva, Leningrad.
(ASCORBIC ACID) (CAROTENE)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

YERMAKOV, A.I.; LUKOVNIKOVA, G.A.

Variations in the chemical composition of strawberries, apples and other fruits and berries in different growing regions. Biokhim.pl. i ovoshch. no.5:221-242 '59. (MIRA 13:1)

1. Vsesoyuznyy institut rasteniyevodstva (otdel biokhimii) Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina.
(Fruit--Chemical composition)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A.

Effect of boron and manganese on the chemical composition of vegetables. Biokhim.pl. i ovoshch. no.5:287-292 '59.
(MIRA 13:1)

1. Vsesoyuznyy institut rasteniyevodstva Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina.
(Vegetables--Chemical composition)
(Plants, Effect of boron on)
(Plants, Effect of manganese on)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A., kand.sel'skokhoz.nauk; KAZAKOVA, A.A., kand.biol.nauk

Effect of growing conditions on the chemical composition and economic features of certain onion species. Trudy po prikl. bot., gen, i sel. 32 no.3:116-132 '59. (MIRA 14:5)
(Onions)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A., kand.biol.nauk

Changes in the quality and quantity of nitrogenous substances in cabbage species and varieties. Trudy po prikl. bot., gen. i sel. 32 no.3:149-158 '59. (MIRA 14:5)
(Cabbage) (Nitrogen--Assimilation and excretion)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LEBEDEVA, N.A.; LUKOVNIKOVA, G.A.

Changes in the vegetative mass, transpiration, and chemical composition of polyploid potatoes. Bot. zhur. 45 no.9:1363-1365 S '60.
(MIRA 13:9)

1. Vsesoyuznyy institut rasteniyevodstva, Leningrad.
(Potatoes) (Polyploidy)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A.

Variations in the chemical composition of potatoes due to polyploidy. Biokhim.pl.i ovoshch. no.6:146-152 '61. (MIRA 14:6)

1. Vsesoyuznyy institut rasteniyevodstva.
(Potatoes) (Polyploidy) (Plants—Chemical analysis)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5

LUKOVNIKOVA, G.A.

Some biologically active substances in vegetables. Prikl. biokhim. i mikrobiol. 1 no.5:594-597 S-O '65. (MIRA 18:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut rasteniyevodstva.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001030820002-5"